



TELEPHONE
1852
NUMBER

THE CHEMIST AND DRUGGIST

TELEGRAPHIC
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CHEMISTICUS LONDON.

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LONDON:
42 CANNON ST.
E.C.

ESTABLISHED IN

Branch Offices:
MELBOURNE,
SYDNEY,
and NEW YORK.

ENGLAND ... 1859. AUSTRALASIA ... 1885.

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une fois par semaine, et l'agenda du Chemist and
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franco.

Abonnementpreis :—The Chemist and Druggist
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and Druggist einmal im Jahr, 10 Mark jährlich,
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Precio de suscripcion :—The Chemist and Druggist,
una vez por semana, y el Agenda del Chemist and
Druggist una vez al año 12.50 pesetas anuales,
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Subscription, 10s. Per Annum, including
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(Single Copies, 4d. Each, Post Free.)

COATED TASTELESS PILLS. (EVANS'.)

These Pills are covered with a thin non-metallic and pearl-like coating, which renders them quite tasteless. The coating contains nothing whatever of a resinous nature, nor any other substance that would, in the least degree, interfere with their perfect solubility. They contain the Essential Oils, as ordered by the official and other formulae, the nature of the coating being such that it does not become discoloured or otherwise injured by their use. Hence there is no necessity to tamper with formulae containing Essential Oils, by the substitution of Gingerine, which is frequently done.

ROLLING AND COATING PILLS according to Private Formula. 1/6 to 5/ per lb. to account, according to size of Pill and quantity. Uncoated, 6d. per lb. less. Private recipes are compounded and coated in five or six days.

LIBERAL DISCOUNT TO BUYERS IN QUANTITY.

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EVANS, SONS & CO.

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And at Manchester, Birmingham, Montreal, Toronto, Victoria, Paris, Sydney, &c.

"CARNABYN"

(REGISTERED)

A NOURISHING MEAT AND MALT WINE.

Strongly recommended by the Medical Faculty in all cases of weakened constitution, and particularly useful in cases of ladies, whilst nursing, and delicate children, or in ailments where a stimulating—digestive—tonic—nutrient is indicated

Dose—A quarter to Two Ounces twice daily.

In Bottles, 2s. 6d., 5s., and 7s. 6d.

HOOVER & COMPANY.

CHEMISTS, ETC.

55 Grosvenor Street, and 26 Davies Street, W.; also at 7 Pall Mall East, London.

LABORATORY—MITCHAM, SURREY.

ALSO, AS SUPPLIED TO H.M. THE QUEEN AND THE ÉLITE OF THE ARISTOCRACY,

HOOVER'S SPARKLING SELTZER

2/6 per dozen. Six dozen Carriage free.

PURE SODA, PURE POTASH, LEMONADE, AND AROMATIC GINGER ALE.

Special Terms for Quantity.

MAY & BAKER

(W. G. BAKER, R. C. HEATH, T. TYRER, W. E. B. BLENKINSOP),

Manufacturing Chemists,
BATTERSEA, LONDON, S.W.

MEDALS, 1851, 1855, 1862, 1867, 1885, 1887, 1888.

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PURE MINERAL ACIDS.

BENZOIC ACID AND ALL BENZOATES.

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For ANÆSTHETICS, PHOTOGRAPHY, and ICE MAKING.

BISMUTH PREPARATIONS,

SOLUTION OF AMMONIO-CITRATE OF BISMUTH, P.B.

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RED AND WHITE PRECIPITATE,

PURE CALOMEL,

AND EVERY MERCURIAL PREPARATION.

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PHENACETIN,

The New Anti-Pyretic and Anti-Neuralgic.

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The New Hypnotic.

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FOR GOLD AND SILVER PLATING AND PHOTOGRAPHY.

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REFINED CAMPHOR,

IN BELLS OR TABLETS, BY A NEW PATENT PROCESS.

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WHOLESALE & EXPORT DRUGGISTS.

17 TODD STREET, MANCHESTER.

Sole Proprietors and Manufacturers of the

"Silver Churn" Butter Colouring,

A purely Vegetable preparation for giving to Butter, at all seasons, a rich cowslip tint, not obtainable by other means. It is the best and cheapest preparation in the market, and does not crust or deposit like the Danish and American makes, and has the further advantage of being a Home Product. Druggists in the grazing districts will find this a very saleable line. It is sold in bottles attractively got up at

6d.	1s.	2s.	5s. size
4s.	8s.	16s.	38s. per dozen.

less usual 10 per cent. discount. Buyers of £5 worth gross value, which may be assorted to suit their requirements, are put on full wholesale terms.

For large Dairies and Druggists who prefer to bottle it under their own name, it may be had in bulk, in 1, 2, and 4 gallon bottles, and 1, 3, and 5 cwt. casks, at special prices, which will be sent on application.

THE "SILVER CHURN" ESSENCE OF RENNET.

For the preparation of Devonshire Junkets, Curds and Whey, Cheese Cakes, &c.

This is always uniform in strength, and, as the above-mentioned dietary articles are growing in favour, will command a ready sale.

6d. size, 4s. per dozen; 1s. size, 8s. per dozen; 2s. size, 16s. per dozen.

TERMS AS ABOVE.

THE "SILVER CHURN" CHEESE RENNET.

A highly concentrated preparation, introduced specially for large Dairies and Cheese Factories, one tablespoonful being sufficient to curdle Twenty-five Gallons of Milk.

Sold in $\frac{1}{2}$, 1, 2, 4 gallon bottles and 30-gallon casks, at special prices which may be had on application. The attention of Druggists in the Cheese Districts is particularly directed to this article.

FLUID EXTRACT OF HERBS (Botanic Extract)

FOR MAKING HERB BEER.

This is a very superior preparation, and is meeting with great success, there being a growing demand for an article of this description during the Spring and Summer Months.

Price in 2-gallon bottles, 1s. per lb. Price bottled, 6d. size, 4s.; 1s. size, 8s.; 2s. size, 16s. per dozen.

Attractively put up with plain labels and metal capsules.

CUCUMBER CREAM AND GLYCERINE.

1s. 2d. per lb.; 1s. in Winchester Quarts. Inseparable and delicately perfumed.

APERIENT SUMMER SALINE.

1s. 4d. per lb.; 1s. 2d. in Pottle Bottles. Pleasantly flavoured and will not cake in the bottles.

CONCENTRATED SOLUBLE ESSENCES.

Prepared specially for Cordials, Aerated Waters, &c., and will mix with Water or Syrup in any proportion without turning turbid.

Essence of Capsicum ...	5s. per lb.,	4s. 6d. in Wr. Qts.	Essence of Horehound	3s. per lb.	2s. 6d. in Wr. Qts.
" English Hop	5s.	" 4s. 6d.	" Lemon	3s. 6d.	" 3s. "
" Ginger	4s.	" 3s. 6d.	" Orange	3s. 6d.	" 3s. "
" Ginger Ale	4s. 6d.	" 4s.			

Buyers of 12 Winchester Quarts and upwards are requested to write for a special price.

PRICE LIST WILL BE SENT ON APPLICATION WITH BUSINESS CARD.

THE SCHOOL OF PHARMACY

OF THE

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

EMERITUS PROFESSORS:

EMERITUS PROFESSOR REDWOOD, Ph.D., F.I.C., F.C.S.

EMERITUS PROFESSOR BENTLEY, M.R.C.S., F.L.S.

The Forty-eighth Session will commence on Wednesday, October 2nd, 1889. Entries may be made between 10 A.M. and 5 P.M. At 8 P.M. the School Prizes will be distributed by the President, after which an Introductory address to the Students will be delivered by Professor John Marshall, F.R.S., F.R.C.S., President of the General Medical Council. All students and friends, ladies as well as gentlemen, are invited to be present.

CHEMISTRY

By PROFESSOR WYNDHAM DUNSTAN, M.A., F.I.C., F.C.S.

The Lectures will begin on Monday, October 7th, at 9 A.M., and be continued on the first three days of each week.

PRACTICAL CHEMISTRY

By PROFESSOR ATTFIELD, Ph.D., F.R.S., F.I.C., F.C.S.

Demonstrator—Mr. F. W. SHORT; Assistant-Demonstrator—Mr. H. D. FUGE.

The Laboratories will re-open on Wednesday, October 2nd.

Instruction in Practical Chemistry will be given daily throughout the Session, from 10 A.M. to 5 P.M. Students can enter for any number of hours daily, or days weekly, for any period.

BOTANY

By PROFESSOR GREEN, M.A., B.Sc.

The Lectures will begin on Friday, October 4th, at 9 A.M., and be continued on the last two days of each week.

MATERIA MEDICA

Demonstrations will be given by Mr. E. M. HOLMES, F.L.S., the Curator of the Museum, on Thursdays, at 9 A.M., commencing on October 3rd.

PHARMACY AND PRACTICAL PHARMACY

Lectures and Demonstrations will be given every week by Mr. JOSEPH INCE, on Tuesdays, Thursdays, and Fridays at 5 P.M., commencing on October 3rd. Laboratory work in Practical Pharmacy will be carried on from 3 to 6 P.M., on Mondays and Wednesdays.

A NEW PROSPECTUS OF THE SCHOOL IS NOW READY.

Application for Admission to the School, for Prospectuses, for advice, or for further information, may be made, personally or by post, to either of the above Teachers, or to their Assistants, in the Lecture Theatre or Laboratories, 17 Bloomsbury Square, London, W.C.

SOUTH LONDON
SCHOOL OF PHARMACY
(LIMITED).

325 KENNINGTON ROAD, LONDON, S.E.

FOUNDED 1868. INCORPORATED 1887.

HEADS OF DEPARTMENTS.

Chemistry, Physics, and Botany.

Dr. MUTER, M.A., F.R.S.E., F.I.C., F.C.S., &c.

Materia Medica and Pharmacy.

W. H. DODD, F.C.S., &c.

Analytical Chemistry.

L. DE KONINGH, F.I.C., F.C.S.

Latin, Mathematics, and Mechanics.

W. TOWNSEND, A.C.P. & Lond. Matric.

**The special claims of this Institution to the attention of
intending students are:**

(1.) That it is the oldest established School of Pharmacy in Great Britain outside the Pharmaceutical Society.

(2.) That it possesses a perfectly fitted STUDENTS' LABORATORY, where 40 men can work at once, each having water, gas, and all conveniences at his own place, and all facing the demonstrators.

(3.) That it has a MUSEUM OF DRUGS, &c., enriched by twenty years of collection and gifts second only to that of the parent society; the students' specimens being renewed annually.

(4.) That it provides a DISPENSARY capable of accommodating 20 students at a time, *for the use of which no extra charge is made.*

(5.) That it possesses a TECHNICAL LABORATORY fully fitted with steam power, stills, &c., where students can actually learn the manufacture of galenicals on the working scale.

(6.) That it has in addition SPECIAL LABORATORIES devoted to quantitative work, including one for water and air analysis, another for assaying and furnace work, and a third for microscopic, polariscopic, spectroscopic, and similar investigations.

(7.) That its students have for years maintained a regular percentage of success at examinations, and that at certain examinations every student sent up has passed at his first trial.

(8.) That all the FEES are ABSOLUTELY INCLUSIVE, and there are no extra charges of any kind.

(9.) That PERIODICAL EXAMINATIONS are held by visiting examiners appointed by the Council of Education of the School, and MEDALS and CERTIFICATES of attendance and merit are awarded to the successful students at such examinations.

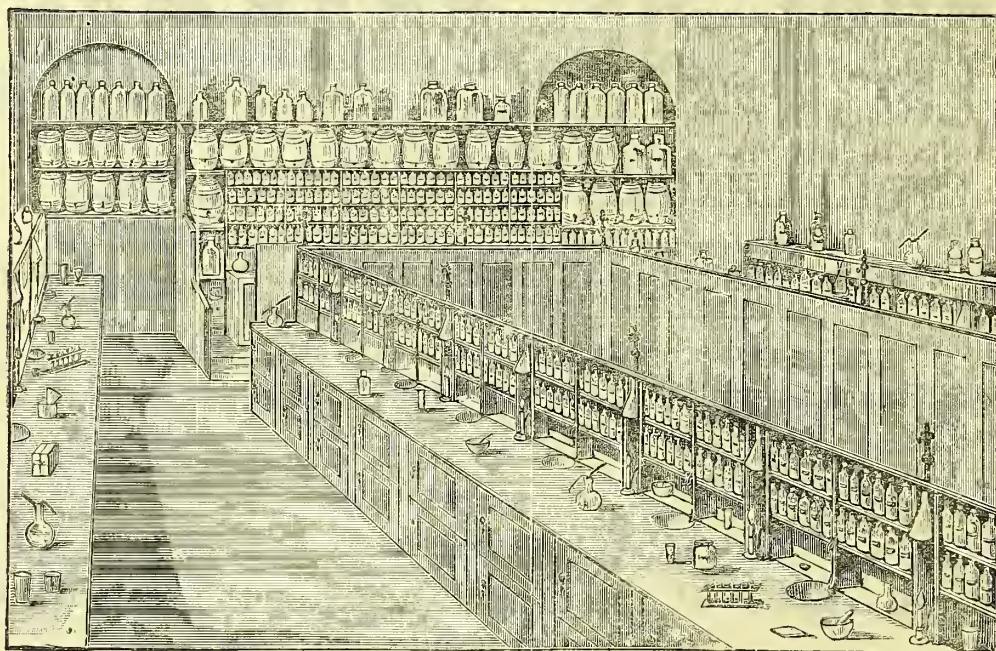
(10.) That all its lecturers are men of long experience and of standing in their particular branches.

FOR SYLLABUS APPLY TO THE SECRETARY.

N.B.—The Session extends from the middle of September to the middle of July, and the best times to commence are September, January, and April, but students may enter at any time provided there is room. Some notice is generally necessary to secure a vacancy.

THE WESTMINSTER COLLEGE OF CHEMISTRY.

Director—Mr. G. S. V. WILLS, F.L.S., F.R.M.S., Fellow of the Royal Botanic Society, &c.
Assisted by a large and efficient Staff of Teachers.



MINOR LABORATORY OF THE WESTMINSTER COLLEGE.

The large Laboratory is thoroughly ventilated and well lighted, and contains seventy-four separate benches. Each bench is supplied with a complete set of reagent bottles, and is fitted with gas, water, basin, and waste pipe; underneath each bench is a lock up cupboard, in which the Student keeps his apparatus.

All gas burners are placed under earthenware chimneys communicating with effective ventilators in the roof, so that all fumes are immediately conducted away.

At the north end of the Laboratory are placed large earthenware jars containing acids and test solutions, from which the reagent bottles are replenished; at this end also are ranged about 150 stock bottles, containing the chemicals in common use in the Laboratory.

At the other end are numbered bottles containing powders and solutions to be analysed by the Students.

The Laboratory is used by Minor Students for two hours daily, from 2 to 4 P.M., also by Evening Students.

The next course of Lectures and Classes for the December and February Examinations will commence on Tuesday, October 22, 1889.

		MINOR.				MAJOR			
FEES	December	£3	5	0	...	£4	4	0	
	February	£9	9	0	...	£7	7	0	
	Until Qualified	£12	12	0	...	£10	10	0	

Students can enter at any time, but are advised to commence their studies at the beginning of a course.

EVENING LECTURES & CLASSES

For Pharmaceutical Students are held in connection with the above College every Tuesday, Wednesday, Thursday, and Friday, from 7 till 9 P.M.

Thursday Evening is devoted to Practical Chemistry only. Fee three months £1 1s.

The Tuesday Classes are intended for Students who have studied the subject's previously. The course extends over a term of three months. It includes fourteen hours' practical Chemistry and four or five Lectures on all the subjects required in the Minor Examination. Fee, £1 1s.

The Wednesday Classes are intended for those who are only just commencing their studies. The course extends over a period of 12 months, and includes one hour's practical Chemistry and one hour's class each evening. Fees, for the complete course, £3 3s.; three months, £1 1s.

The Friday Classes are intended for those preparing for the Preliminary Examination of the Pharmaceutical Society. Fee, three months, 15s.

ANNUAL DINNER.

The Annual Dinner of the College will take place on Thursday, October 3rd, at the Holborn Restaurant. Former Students desirous of being present are requested to apply for tickets at once, as the number is limited. Dinner at 7 P.M.; morning dress.

FOR PROSPECTUS AND OTHER PARTICULARS APPLY TO

MESSRS. WILLS & WOOTTON, TRINITY SQUARE, BOROUGH, LONDON, S.E.

“CONCILIO ET LABORE.”

THE MANCHESTER COLLEGE OF PHARMACY,

225 and 227a Oxford Street, Manchester.

Director—Mr. W. SPENCER TURNER, Pharmaceutical Chemist.

Deputy—Mr. GEO. CLAYTON, Pharmaceutical Chemist.

The year's work of the **FULL-TIME CLASSES** for the **MINOR**
and **MAJOR** is divided into three courses, viz.:

JANUARY to APRIL, APRIL to JULY, SEPTEMBER to DECEMBER.

The Fee for each Course is

£9 9 FOR MINOR STUDENTS AND £4 16 6 FOR MAJORS.

The Afternoon, Evening, and Once-a-Week Classes for the **MINOR** and **MAJOR**
are divided into two Courses, viz.:

January to July	...	...	Fee	...	MINOR, £5 5 0;	MAJOR, £2 10 0.
September to December	...	„	...	„	£3 3 0;	„ £1 12 6.

During the year ending at the July examinations **FIFTY** Students from this School passed the
Minor, and **SIX** the Major. A Pass List will be sent on application.

Students under 20 pay half-fee to all Classes, and any one Class may be
joined on payment of a proportional fee.

SESSION 1889-90.

THE LIVERPOOL SCHOOL OF PHARMACY,**36 OXFORD STREET, LIVERPOOL.****PRINCIPAL: MR. J. S. WARD, PH. CH., F. C. S.**
&C., &C.

"This School has the rather unique distinction of having laid the foundation of the training of two men who have become Pereira Medallists."—*Chemist and Druggist*, September 22nd, 1888.

Last Session was the most successful one in the history of the School, 25 having passed the Minor Examination, as shown in the following list:—

"MINOR" PASS LIST FOR THE SESSION 1888-89.

OCTOBER, 1888.

Mr. J. R. BLABEY ...	Woolton.
" F. W. JACKSON ...	Blackpool.
" J. M. JONES ...	Conway.
" C. G. MCGIBBON ...	Liverpool.
" G. H. NICOL ...	Dumfries.
" C. F. PARKER ...	Liverpool.
" E. H. ROGERS ...	London.
" W. A. ROBERTS ...	Bangor.

DECEMBER, 1888.

Mr. R. PRINCE ...	Longton.
" A. SHRUBSOLE ...	Chester.
" A. G. WRIGHT ...	Plymouth.

JANUARY, 1889.

Mr. A. F. JEWELL ...	Grantham.
" R. G. OWEN ...	Birkenhead.

APRIL, 1889.

Mr. J. BLENKIRON ...	Shildon.
" H. ELLEKER ...	Ripon.
" A. F. JEWELL ...	Liverpool.
" G. J. MALEY ...	Douglas.
" R. H. MITCHELL ...	Rutherglen.
" J. L. MOXON ...	Wellingborough.
" H. C. THOMPSON ...	Belford.

JUNE, 1889.

Mr. ROBERT PARKER ...	Rishton.
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JULY, 1889.

Mr. H. E. BOWRON ...	Liverpool.
" C. BATTY ...	Glossop.
" T. POSTLETHWAITE ...	Kirkby-in-Furness.
" W. A. WYNNE ...	Mold.

The Principal has great pleasure in submitting this List as evidence of the development and success of the Liverpool School.

The rate at which the School is growing is perhaps best shown by the following comparison:—

In the Session 1886-87 we passed 12 Minors.
" " 1887-88 " 18 "
" " 1888-89 " 25 "

"Dr. Symes said that, on a recent visit to the School he was much pleased to find such good educational arrangements and so many Students earnestly at work."—*Vide Ph. Journal*, February 16th, 1889.

SCHOLARSHIPS.

The Redwood Scholarship for 1889-90 has been won by a pupil of the Liverpool School, Mr. F. B. Sherlock. . . . Two years ago a "Bell" Scholarship was won by another pupil of this School, Mr. W. A. Salter, who afterwards became Pereira Medallist.

Syllabus, Pass List, Time Tables, Fees, &c., sent post free on application to the Principal.

Ward's "Doses and Specific Gravities of the B.P., 1885," price Sixpence, post free.

THE LONDON HOSPITAL AND MEDICAL COLLEGE.

HOSPITAL STAFF.

CONSULTING PHYSICIAN—Sir Andrew Clark, Bart., LL.D., F.R.S., and Dr. Ramskill.

CONSULTING SURGEON—Mr. Jonathan Hutchinson, F.R.S.

PHYSICIANS—Dr. Langdon Down, Dr. Hughlings Jackson, F.R.S., Dr. Sutton, Dr. Fenwick, Dr. Stephen Mackenzie, Dr. Sansom, Dr. Turner, Dr. Gilbert Smith, Dr. Warner, Dr. Ralfe.

ASSISTANT-PHYSICIAN—Dr. James Anderson.

SURGEONS—Mr. Rivington, Mr. Waren Tay, Mr. McCarthy, Mr. Frederick Treves, Mr. C. Mansell Moullin.

ASSISTANT-SURGEONS—Mr. Reeves, Mr. Hurry Fenwick, Mr. Eve.

OBSTETRIC PHYSICIAN—Dr. Herman.

ASSISTANT OBSTETRIC PHYSICIAN—Dr. Lewers.

OPHTHALMIC SURGEONS—Mr. Waren Tay, Mr. Eve.

PHYSICIAN TO THE SKIN DEPARTMENT—Dr. Stephen Mackenzie.

AURAL SURGEONS—Dr. Edwd. Woakes, Mr. Mark Hoyell.

SURGEON-DENTIST—Mr. Barrett.

LECTURERS.

Medicine—Dr. Stephen Mackenzie.

Surgery—Mr. Rivington.

Anatomy—Mr. Treves.

Physiology and Practical Histology—Mr. McCarthy.

Chemistry—Dr. Meymott Tidy.

Pathology—Dr. Sutton.

Midwifery—Dr. Herman.

Toxicology—Dr. Meymott Tidy.

Medical Jurisprudence—Dr. Sansom.

Materia Medica—

Botany—Dr. F. Warner.

Comparative Anatomy—Mr. Mansell Moullin.

Experimental Physics—Mr. Page.

Ophthalmic Surgery—Mr. Eve.

Diseases of the Ear—Dr. Woakes.

Diseases of the Throat—Mr. Mark Hoyell.

Anatomy and Pathology of the Teeth—Mr. Barrett.

Practical Anatomy—Mr. Mansell Moullin.

Practical Chemistry—Mr. Page.

Operative Surgery—Mr. Rivington.

Practical Surgery—Mr. H. A. Reeves.

Demonstrators of Morbid Anatomy—Dr. Sutton, Dr. Turner, Dr. Anderson, Mr. Eve.

Pathological Histology—Mr. Eve.

Anæsthetics—Dr. Hewitt.

Emeritus Professor of Medicine—Sir Andrew Clark, Bart., F.R.S.

Emeritus Professor of Surgery—Mr. Jonathan Hutchinson, F.R.S.

The SESSION 1889-90 will commence on Tuesday, October 1, 1889. An Old Students' Dinner, which will take the place of an opening ceremony, will be held in the New Library at 7 P.M. The chair will be taken by Dr. Langdon Down.

Fee for Lectures and Hospital Practice, 90 guineas in one sum, or 100 guineas by three instalments.

The Hospital, which is the largest General Hospital in the kingdom, contains nearly 800 beds, all in constant use. There are wards for accidents, surgical and medical cases, diseases of women and children, and ophthalmic cases. Special departments for diseases of the eye, ear, throat, skin, and teeth, and for cancer, tumours, diseases of the bladder, piles and fistula. Number of In-patients last year, 8,373; Out-patients, 101,548; Accidents, 7,456.

Surgical operations daily.

APPOINTMENTS—Resident Accoucheur, House Physicians, House Surgeons. Forty of these appointments are made annually. Numerous Dressers, Clinical Clerks, Post-mortem Clerks, and Maternity Assistants are appointed every three months. All appointments are free. Holders of resident appointments are also provided free board. The New College Buildings are now complete, and afford more than double the former accommodation.

TWO ENTRANCE SCIENCE SCHOLARSHIPS, value £60 and £40, and TWO BUXTON SCHOLARSHIPS, value £30 and £20, will be offered for competition at the end of September to new Students. Sixteen other Scholarships and Prizes are given annually.

Luncheons or dinners at moderate charges can be obtained in the Students' Club.

Special Classes for the Preliminary Scientific and Intermediate M.B. Examinations of the University of London, and for the Primary and Pass Examinations for the Fellowship of the Royal College of Surgeons of England, are held throughout the year.

Special entries for Medical and Surgical Practice are made.

The London Hospital is now in direct communication by Rail and Tram with all parts of the Metropolis, and the Metropolitan, Metropolitan District, East London, and South-Eastern Railways have stations within a minute's walk of the Hospital and College.

For Prospectus and particulars apply, personally or by letter, to

Mile End, E.

MUNRO SCOTT, Warden.

UNIVERSITY OF EDINBURGH

SESSION 1889-90.

Principal—SIR WILLIAM MUIR,
K.C.S.I., D.C.L., LL.D., Ph.D.

The CLASSES will be opened as follows, and will meet daily (Saturdays excepted) unless otherwise specified.

MEDICINE.

Dean—Professor THOMAS R. FRASER, M.D.

Practice of Physic, Tuesday, October 15th, nine.—Professor Grainger Stewart, M.D.

Chemistry, Tuesday, October 15th, ten.—Prof. Crum Brown, M.D.

Surgery, Tuesday, October 15th, ten.—Prof. Chiene, M.D.

Institutes of Medicine or Physiology, Tuesday, October 15th, eleven.—Prof. Rutherford, M.D.

Practical Physiology, Monday, October 21st, nine.—Prof. Rutherford, M.D. Midwifery and Diseases of Women and Children, Tuesday, October 15th, eleven.—Prof. Simpson, M.D.

Clinical Surgery (Royal Infirmary, Monday and Thursday), Thursday, October 17th, twelve.—Prof. Annandale, M.D.

Clinical Medicine (Royal Infirmary, Tuesday and Friday), Tuesday, October 15th, twelve to two.—Professors Grainger Stewart, T. R. Fraser, and Greenfield, and Prof. Simpson on Diseases of Women.

Anatomy, Tuesday, October 15th, one.—Prof. Sir William Turner, M.B. Practical Anatomy (daily), Tuesday, October 1st.—Prof. Sir William Turner and Demonstrators.

Anatomical Demonstrations, Tuesday, October 15th, four.—Prof. Sir William Turner and Demonstrators.

Materia Medica, Tuesday, October 15th, two.—Prof. Thomas R. Fraser, M.D.

Practical Materia Medica (including Pharmacy), Tuesday, October 15th, ten.—Prof. Thomas R. Fraser, M.D.

Practical Chemistry, Monday, December 2nd, eleven and two.—Prof. Crum Brown.

General Pathology, Tuesday, October 15th, three.—Prof. Greenfield, M.D.

Practical Pathology (daily), Tuesday, October 15th.—Prof. Greenfield, M.D.

Botany (given in Summer Session).—Prof. Bayley Balfour, M.D., D.Sc.

Practical Botany (Advanced), Wednesday, October 23rd.—Prof. Bayley Balfour, M.D., D.Sc.

Practical Botany (Elementary), Thursday, January 9th.—Prof. Bayley Balfour, M.D., D.Sc.

Medical Jurisprudence (given in Summer Session).—Prof. Sir Douglas MacLagan, M.D.

Practical Hygiene, Tuesday, January 7th, two.—Prof. Sir Douglas MacLagan, M.D.

Natural History, Tuesday, October 15th, twelve.—Prof. Ewart, M.D.

Elementary Practical Zoology.—Prof. Ewart, M.D.

Advanced Practical Zoology.—Prof. Ewart, M.D.

Clinical Instruction in Royal Infirmary (daily), noon.—The Clinical Professors.

Mental Diseases (given in Summer Session).—T. S. Clouston, M.D.

Diseases of the Eye (given in Summer Session).—Douglas Argyll Robertson, M.D.

Clinical Instruction on Diseases of Children at Royal Hospital for Sick Children, Monday, October 21st, ten.—James Carmichael, M.D., and Charles E. Underhill, M.B.

Comparative Embryology, Tuesday, October 15th, three.—George Brook.

The Philosophy of Natural History, November.—G. J. Romanes, M.A.

The Classes in the Faculty of Medicine, except Botany, Natural History, Clinical Medicine, and Clinical Surgery, meet in the University

New Buildings.

Practical Instruction is afforded in Laboratories furnished with the necessary appliances, and in Tutorial and Practical Classes in connection with the above Chairs, and under the superintendence of the Professors.

The Preliminary Examinations in Arts for Degrees in Medicine, &c., begin on Tuesday, October 1st, 1889, and Tuesday, March 4th, 1890.

The Classes will meet for the last time before the Christmas Vacation on Friday, December 20th, and will re-assemble on Tuesday, January 7th.

Graduation Ceremonial in Medicine, &c., Friday, August 1st, 1890.

During the SUMMER SESSION, Lectures will be given on the following

Subjects:—

Botany and Vegetable Histology, by Prof. Bayley Balfour.

Medical Jurisprudence, for Students of Law and Medicine, by Prof. Sir Douglas MacLagan.

Clinical Medicine, by Professors Grainger Stewart, T. R. Fraser, and Greenfield; and by Prof. Simpson, on Diseases of Women.

Operative Midwifery and Gynecology, by Prof. Simpson.

Clinical Surgery, by Prof. Annandale.

Chemistry (Advanced Class), by Prof. Crum Brown.

Natural History, by Prof. Ewart.

Operative Surgery, by Prof. Chiene.

Anatomical Demonstrations, by Prof. Sir William Turner, and David Hepburn, M.B.

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September, 1889. JOHN KIRKPATRICK, Sec. Sen. Acad.

8

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Materia Medica, 3 P.M.—Professor Dougall, M.D.
Surgery, 11.30 A.M.—Professor Knox, M.A., M.B.
Clinical Surgery, 9 A.M.—Professor McEwen, M.D.
Pathology, 3.30 P.M.—The Pathologist of the Royal Infirmary.
Medicine, 1 P.M.—Professor Robertson, M.D. **Clinical Medicine**, Prof. McVail, M.B.
Medical Jurisprudence—Professor G'aiser, M.D.
Clinical Medicine—Professor McVail, M.B.
Gynaecology, 3.30 P.M.—James K. Kelly, M.D.
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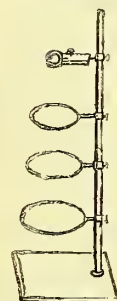
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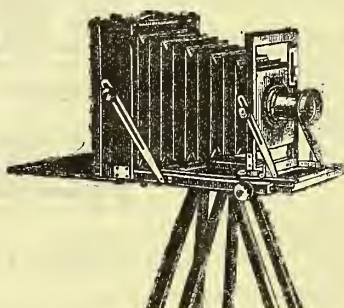
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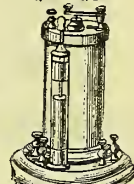
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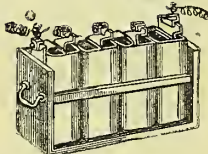
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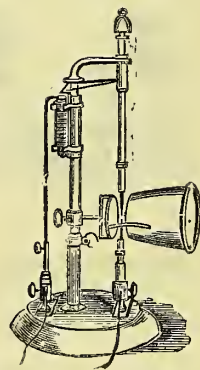
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Although the Fire that broke out at our Laboratories at Wandsworth, on the 12th inst., will inconvenience us considerably, we hope to be able to fill our orders from the large stock of goods we hold at our Snow Hill Warehouses; but in cases where we are unable to do so, we must claim your kind indulgence, and feel sure you will readily accord this to us under the circumstances in which we have been unfortunately placed.

Yours faithfully,

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WE regret having to confirm to our friends the sad news that appears in the daily papers of this date, that one of the bravest and most courageous of Firemen—William Godfrey Jacobs—while in the execution of his most arduous and dangerous duties at the fire which took place yesterday, at our Pharmaceutical Laboratories, situated at Wandsworth, unfortunately lost his life.

Words will not express the grief we feel that such a brave man should have been killed—but we are thankful that he does not leave a wife or family to mourn his loss.

Throughout the entire conflagration, which lasted several hours, the Firemen worked so energetically and bravely, that they have earned our everlasting indebtedness and obligations.

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TERMS

Advertisements in this department must be paid for in advance. From this rule no deviation can be made. Insertions are charged at the rate of 1d. per word, provided the advertiser attaches his name and address, for each word of which he must also pay at the same rate; or if he pays 1d. per word, his name and address will be registered and a figure attached to his advertisement. All correspondence referring to that figure must be addressed to "The Publisher of THE CHEMIST AND DRUGGIST, 42 Cannon Street, E.C., and the figure must be distinctly endorsed upon the envelope. Letters will then be forwarded to their proper destination. A price is counted as one word, as e.g., £1 10s. 6d.

DEPOSIT OF MONEY.—In order to ensure safety we offer the following system:—The purchaser of anything advertised in the Exchange Column may remit the amount to us, accompanied by a commission of 6d. if the amount is £3 or under; and 1s. if over that sum. We acknowledge receipt of deposit to both parties, and hold the money until we are satisfied that either the goods are returned to their original owner or the purchase completed.

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10 lbs. pot. iodide, 15 cwt. zinc sulph. com., 15 cwt. barii chlor. xt., 2 lbs. mace elec., 3 lbs. pulv. myrrh; what offers? Seeley, Halifax.

Literature.

Chemist and Druggist, 1888. Flint, Gorton.
Hart & Barbour's "Manual of Gynaecology," new, 10s. 20/20.
Will sell for 20s. 10½ years' unbound *Chemist and Druggist* from 1887 to present date; also 25 vols. *Pharmaceutical Journal* bound in half-roan, fair condition; vols. 1 to 25 complete, 20s. Apply, Mrs. Richards, Clifton Villa, 37 Waddon Road, Croydon.
Pharmaceutical Journals, 1871, 1873, 1874, 1875, 1876, 1877, 1881, complete; 1870, 1872, 1878, 1879, 1880, 1882, 1883, incomplete, lot 5s. Garden tent, about 6 feet square, pegs and cords, 25s. Crawshaw's penny dyes, 4s. gross. Judson's dyes half retail price. Preston, Chemist, Dalton-in-Furness.

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Second-hand dental instruments or appliances; state price. Anderson, Dentist, Eccles, Manchester.
Full price (4d.) will be paid for copies of *The Chemist and Druggist* for September 14, 1889, sent to the Publisher, 42 Cannon Street, E.C.
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Address Wanted.

Hugh Jones, native of North Wales, manager at Swansea to December last; any information will oblige. Davies, 30 High Street, Swansea.

A Copy of this Supplement is inserted in every number issued of "The Chemist & Druggist."

The Chemist and Druggist

SUPPLEMENT

Businesses Wanted.
Businesses for Disposal.
Premises to Let.
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SATURDAY, SEPT. 21, 1889.

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Situations Vacant.
Situations Wanted.
Miscellaneous.

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ADVERTISEMENTS for this Supplement can be received on FRIDAY MORNING, first post, though it is requested that these may be sent in as early in the week as possible.

EXCHANGE COLUMN ADVERTISEMENTS will appear on page 18 (bottom folio), and must be received not later than THURSDAY AT NOON, to appear in the issue of the Saturday following.

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GENUINE Light Retail and Dispensing Business in suburb of large town in Lancashire; returns £700; good profits; handsome corner shop; good house; immediate possession may be had; satisfactory reasons for disposal; no agents. For full particulars apply, "Antipyrin," Office of THE CHEMIST AND DRUGGIST, 42 Cannon Street, E.C.

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OPENING in select Country Business, touching all branches, for Apprentice who has passed preliminary. Chas. M. Footitt, Marlow, Bucks.

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LINCOLNSHIRE.—To be SOLD BY AUCTION, by Mr. W. Hemsley, of Tunbridge Wells, at the "White Hart," Spilsby, on Monday, the 23rd day of September, at 3 o'clock in the afternoon precisely, the valuable **LEASEHOLD PROPERTY**, consisting of Chemist's Shop (double-fronted, plate-glass), 3 sitting-rooms, 10 bedrooms, 2 kitchens, pantries and cellars and all conveniences, 10 warehouses and garden at back; the whole covering about 8,338 square feet; the above is situated in the best position of Market Square, opposite the Town Hall and Corn Exchange, and has been for over 50 years established as a Chemist's business. For further information apply to A. C. Farmer, Chemist, Southborough, near Tunbridge Wells. Solicitors, Messrs. Walker, Sons & Rainey, Spilsby.

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WANTED, thorough Wet and Dry Counterman. Apply, W. C. H., 50 Southwark Street, S.E.

WANTED, at once, qualified Assistant (outdoors); short hours; no Sunday duty. Macaulay, Chemist, Wakefield.

JUNIOR Assistant; immediately; outdoor; no Sunday duty; quick at counter, &c. Apply to Mr. W. D. Gibb, Chemist, Winchester.

WANTED, a competent and trustworthy Assistant to manage a branch. Apply, with full particulars, and enclose photo, to E. Lloyd, Chemist, Abergyle.

WANTED at once, a steady qualified Man (Minor), age 30, for an Open Surgery. Full particulars, salary, &c., to "Medicus," Dergate, King's Hall Road, Beckenham.

TRAVELLERS calling on Grocers, Oil and Colourmen and Chemists (town and country) who can take an extra Commission, should apply to B. W. F., Davies, Finch Lane, London, E.C.

WANTED, a qualified elderly man as Assistant, or part time, to reside indoors. Apply by letter, stating age, qualification, and salary, to H. P., 44 Allwall Road, Clapham Junction, S.W.

IMMEDIATELY, a Junior Assistant; indoors; in a mixed business. Apply, stating age, height, and salary, and when disengaged, and enclose photo, to Tremear, Chemist, Barnstable.

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WANTED at once, a Junior Assistant. Apply, with testimonials; enclosing carte-de-visite (to be returned), stating age, height, salary required, &c., to W. E. S., 22 High Street, Brompton, Chatham.

IMMEDIATELY, Assistant; good counterman, and well up in general routine of the trade; state age, height, salary, and enclose photo; not answered in three days declined. S. Wand, Chemist, Leicester.

WANTED, at once, two Youths, aged about 16 to 18, in Patent Medicine and Bottle departments, respectively, of Druggist's Sundries house. Apply, Thompson, Walters, Hole & Co., Limited, Curtain Road, E.C.

AS Manager for Branch; must have Minor qualification, be thoroughly competent, and accustomed to first-class Dispensing and Retail. A vacancy also for an active Junior. Particulars, with photo, to "Spa," care of Carlton & Sons, Horncastle.

WANTED immediately, an active Junior, good counterman, for Yorkshire town. Address with references (photo if convenient) and experience, "Alpha," care of Messrs. Harker, Stagg & Morgan, 15 Laurence Pountney Lane, London, E.C.

A QUALIFIED Married Man, who would accept free rental of four rooms, in return for a little daily help and care of premises; pleasantly situated in London suburb. Address, "Mutual," Office of THE CHEMIST AND DRUGGIST, 42 Cannon Street, E.C.

WHOLESALE.—Wanted, an experienced Assistant, to take charge of Town Order Department; must have thorough knowledge of General Drug Business. Apply, giving references and stating salary expected, by letter only, to Boileau & Boyd, Dublin.

WANTED immediately, Manager; minor qualification; outdoor; single; hours 8 to 8, Saturdays 8 to 11; no Sunday or night duty; state if abstainer, salary, age, references, experience, and when disengaged. Address, "Minor," Handsworth Woodhouse, Sheffield.

TRAVELLERS wanted (town and country), on Commission, to push well-known Specialties among Medical Men and Chemists; those already having other commissions only need apply by letter. "Sulphonal," Office of THE CHEMIST AND DRUGGIST, 42 Cannon Street, E.C.

QUALIFIED Dispenser wanted; one who has a knowledge of the Wholesale trade, and can put capital into the business preferred; full particulars on application. Please state references, age, salary, &c., to the International Drug Company (Limited), 159 Stretford Road, Manchester.

JUNIOR Assistant, outdoor, for a light Retail and Dispensing business; one who has served his apprenticeship in a good Retail and Dispensing business preferred. State full particulars as to age, height, experience, salary, and references, to G. Briggs, 221 Woodhouse Lane, Leeds.

ACTIVE, reliable Assistant immediately; must be good salesman and accurate dispenser, for seaport town in Yorkshire. Address, enclosing photo and references, also stating salary expected, "Alpha," care of Messrs. Harker, Stagg & Morgan, 15 Laurence Pountney Lane, London, E.C.

AN Assistant (Indoors) with good experience required, about 25 years of age—if able to extract teeth preferred—for Retail and Dispensing Business; must be reliable and have good references. Apply personally or by letter, stating salary and full particulars, to J. B. Portway, 225 Jamaica Road, S.E.

SHIPPING Clerk.—Wanted, Junior Clerk, accustomed to invoicing; must be able to take shorthand notes, and correspond in French and German; knowledge of Spanish desirable; salary £100 to £120. Copies (only) of testimonials to "Clericus," Office of THE CHEMIST AND DRUGGIST, 42 Cannon Street, E.C.

FOR A BRANCH.—An unmarried Assistant, preferably about 26 or 27, who has lived in some good class business; salary £50 and commission on all increase in the business; indoors; as he would be left almost in sole charge unimpeachable references would be necessary. J. Feaver, 71 Bohemia Road, St. Leonards.

WANTED end of September, gentlemanly Assistant (indoors); accustomed to good-class Retail and Dispensing Business; Minor; must be energetic and able to take management. Apply, stating age, height, and salary required, with photo, to "Lens," care of Messrs. Ayrton & Saunders, Duke Street, Liverpool.

IMMEDIATELY.—An Improver or Junior for a Light Retail, Prescribing, and Dispensing Business; comfortable home. State age, height, salary required, reference, and enclosing photo, to Frederick James Lea, Dispensing Chemist and Dentist (by Exam.), The Folkestone Pharmacy, Tontine Street, Folkestone.

JUNIOR or Improver; accustomed to light retail, dispensing, and prescribing business; a steady, willing young man requiring time for study and attending classes for Prelim. or Minor in lieu of part salary will find this an excellent opportunity; comfortable home. Full particulars by letter to D., 89 Church Street, Birkenhead.

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- A**SSISTANT; good mixed business; 22; 6½ years. J. C., 43 Bridge Street, Hereford.
- J**UNIOR, nearly 3 years' London experience; aged 22. "Prelim.," 61 High Road, Lee.
- I**MPROVER; aged 19; 3 years' experience; good references. P., 11 Priory Road, Dover.
- T**EMPORARY or Permanent; unqualified; experienced. N., 30 Union Street, Well Street, W.
- A**SSISTANT; aged 25; Churchman. "Chemicus," High Street, Crickhowell, Breconshire.
- I**MPROVER; London preferred; time for study; aged 20. "Drugs," 69 George Street, Hastings.
- A**SSISTANT; 39; 5ft. 8in.; qualified; unmarried. "Chemist," 71 Southampton Street, Camberwell.
- B**Y **S**TUDENT; few hours every evening; Dispensing or otherwise. Davies, 26 Trinity Street, S.E.
- J**UNIOR Assistant for Retail and Dispensing Business. T. Squire, 121 Cornwall Road, Bayswater, W.
- T**EMPORARY or Permanent; disengaged 23rd. Goodwin, 117 Kinglake Street, Old Kent Road.
- L**OCUM-TENENS or Manager; qualified; experienced; 60. Wallworth, 34 Marylands Road, W.
- J**UNIOR, immediately; London or near; abstainer; undeniable references. Laver, Manse, Herne Bay.
- D**I-ENGAGED for 3 weeks (24); 6 ft.; prescribe, extractor. Moore Milton Cottage, Nailsworth, Glos.
- L**OCUM-TENENS; town or country, about 26th; registered (40). Williams, Chemist, 70 Ledbury Road, W.
- T**EMPORARY; experienced; aged 39; terms moderate; disengaged. W. A., 115 Barnsbury Road, London, N.
- L**OCUM-TENENS; Minor qualification; highest references; experienced. Chemist, 93 High Street, Hull.
- A**SSISTANT or manage branch; outdoors; good references. Hall, Forest Moor, Knarresborough, Yorkshire.
- A**SSISTANT or Branch Manager; outdoors; 28; unqualified. "Cæsar," 22 Lord Street, Cheetham, Manchester.
- M**ANAGER or Assistant; good Prescriber and Extractor; aged 29; married. 48 Cotswood Street, Liverpool.
- T**EMPORARY; outdoors; Branch; Minor; experienced; aged 31; tall. F., 113 Riversdale Road, Highbury, N.
- D**ISPENSER or otherwise; disengaged; reliable, experienced. Parton, 100 Forest Hill, Chemist, The Plain, Wandsworth.
- P**ILL-COATING.—Young man wants situation; aged 19; used to wholesale pill-making. T. E., 2 James Street, N.W.
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- W**ANTED, situation with Manufacturing Pharmacist; competent analyst; best references. Thornton, Esk Terrace, Whitby.
- J**UNIOR; London preferred; 3½ years' experience; aged 19½; passed Preliminary. H. F. G., 19 High Street, Bedford.
- F**EW hours daily, as Dispenser; thoroughly experienced; good references. H. G., 6 Abercorn Terrace, Hatchard Road, Upper Holloway.
- W**HOLESALE or Retail; 7½ years' experience; aged 22½; 2 years' good City reference; outdoor preferred. Z., 8 Thornton Street, Brixton Road, S.W.
- D**ISPENSER (qualified); well experienced, Midwifery, Club, Dispensary, Retail, &c. 92/23, Office of THE CHEMIST AND DRUGGIST, 42 Cannon Street, E.C.
- A**FTERNOON, evening, or both.—Chemist's Assistant or Surgeon's Dispenser; thoroughly experienced; 30. "Coccus," Office of THE CHEMIST AND DRUGGIST, 42 Cannon Street, E.C.
- T**EMPORARY or Permanent; unqualified; varied experience; good references; active counterman; aged 36; height 5 ft. 8½ in.; single; abstainer. "Vigour," Mr. Wain, Ripley, Derby.
- D**RUG or Sundry Traveller; a Gentleman open for engagement; West or South of England, Midlands, or Wales. "Cinchona," Office of THE CHEMIST AND DRUGGIST, 42 Cannon Street, E.C.
- A**SSISTANT; age 24; height 5ft. 10in.; 8 years' good experience; 2 years West-end of London; disengaged beginning of October; London preferred. "Spes," 1 Preston Road, Brighton.
- B**RANCH Manager or Assistant; aged 27; varied experience; tooth extractor; married; excellent reference. "Chemicus," care of Mr. John Woodbridge, High Street, Smethwick, Birmingham.

ENERGETIC Manager; reliable; good experience; for London; outdoor; age 32; thorough business man; good and successful prescriber; highest references. H. C., 70 Finsbury Park Road.

AS Branch Manager or Assistant; Minor; aged 23½; 9 years' experience; outdoors; extract, prescribe, experienced dispenser; salary 35s. per week; excellent testimonials. "Minor," School House, Kinoulton, Notts.

TRAVELLER; aged 25; sound connection South Wales and West; desires to represent good house; drug or sundry; references and security. Apply, 93/5, Office of THE CHEMIST AND DRUGGIST, 42 Cannon Street, E.C.

A YOUNG Scotchman wishes situation abroad; Minor; aged 24 years; height 5 feet 6 inches; thoroughly experienced in details; abstainer and non-smoker; disengaged in October; excellent references; long engagement not objected to. "Perseverentia," Office of THE CHEMIST AND DRUGGIST, 42 Cannon Street, E.C.

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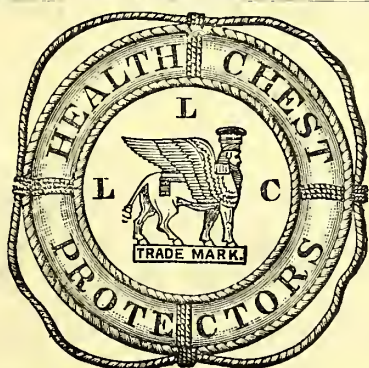
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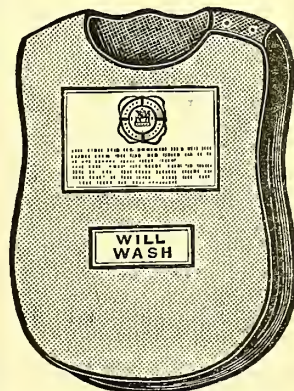
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One Ounce of these Waters added to Forty Ounces of Distilled Water forms a clear Medicated Water (without filtering), similar in every respect to those prepared according to the directions of the British Pharmacopœia, and free from all Chemical impurity. They will keep good any length of time in any climate.



Aqua Anethi, Concent., 4/ lb.	Aqua Cinnam. Var. Concent., 8/ lb.	Aqua Fœniculi, Concent., 4/ lb.	Aqua Pimentis, Concent., 4/ lb.
" Anisi " 4/ "	" Cassie " 4/ "	" Menth. Pip. " 4/ "	" Rosæ " 8/6 "
" Camphoræ " 4/ "	" Flor. Aurant. " 8/6 "	" Ang. " 8/ "	" Rosæ Virgin " 10/6 "
" Carul " 4/ "	" Flor. Sambuct " 8/6 "	" Virid. " 4/ "	

The above are put up in Bottles of 1/2 lb. or 1 lb. and upwards, each of which has the Inventor's Protection Label over Cork.

From the LANCET, July 15, 1882:—"CONCENTRATED WATERS (Robinson's, Pendleton, Manchester).—Among the samples sent to us we find Aq. Anethi, Anisi, Cinnam. Var., Rosæ, and some dozen of others. Diluted with forty parts of water they form the ordinary waters of the Pharmacopœia. They are excellent in quality, and will be very useful, especially in country practice. [1]

Wholesale Agents: HEARON & Co., London, and most Provincial Wholesale Druggists. PREPARED BY THE INVENTOR. B. ROBINSON, MANUFACTURING CHEMIST, DISTILLER, AND BREWER OF BRITISH WINES, MANCHESTER.

ROWNTREE'S

The "MEDICAL PRESS AND CIRCULAR":—

"Certainly this preparation is of delicate flavour . . . It is perfectly soluble . . . the small quantity required for the immediate production of a cup of excellent cocoa will ensure for this 'Elect Extract' a favourable reception at the hands of persons of weak digestion, and all who prefer this wholesome beverage to tea and coffee.



The "BRITISH MEDICAL JOURNAL" says:—

"Rowntree's Cocoa Extract is one of the best. Its flavour and aroma are good. Cocoa thus prepared is one of the most digestible articles of food."

YORK, ENGLAND.

RAIMES' CACHOUS.

RED AND WHITE ROSES,

The most popular Size and Shape Cachou in the Trade.



FRAGRANT "BOUQUET" CACHOUS



HELIOTROPE



VIOLET



ORANGE BLOSSOM



PRIMROSE



The excellence of the perfume and the superior make of these Cachous create a great demand wherever they are introduced.

Price 2s. 6d. per lb., 5 per cent. discount.

Samples on application.

Parcels of 14 lbs. forwarded carriage paid, with a handsome Glass Show Jar gratis (fig. A, No. 5, Maw's list), on receipt of P.O.O. for 33s.

RAIMES & CO., WHOLESALE DRUGGISTS, YORK & EDINBURGH.

T. BAGE BLYTON & CO.

MANUFACTURING PHARMACEUTICAL CHEMISTS,

AND MAKERS OF MEDICATED LOZENGES OF

The Throat Hospital and

The British Pharmacopœias.

Jujubes and Pastilles.

Private and Proprietary

Formulæ carefully Compounded.

Cachous and Compd. Pellets.

Bronchial and Compound

Sulphur Lozenges.

Chlorodyne Lozenges.

Composition Tablets.

Medicated Candies.

Worm Tablets.

Boiled Sweets.

Twemlow's Chlorodyne.

Fruit Salines.

Soluble Essence of Lemon.

OUR BRONCHIAL LOZENGES CREATE A SALE ON THEIR MERITS.

WORKS—76 GORDON STREET, LOWER BROUGHTON, MANCHESTER, & GREENGATE, SALFORD.

Agent in London—Mr. ARTHUR W. SHIRLEY, 30 Paternoster Square, E.C.

THE "LONDON-MADE" SYPHON BOTTLE

(TITLE REGISTERED).

Obtained the HIGHEST AWARD at the International Health Exhibition, London, 1884.



The high reputation this bottle has achieved is due to the fact of its being in every particular the most perfect yet introduced; and when compared with others in the market it stands pre-eminent. It is most simple in its working parts, therefore the least liable to get out of order; it is the most easily opened, the lightest pressure on the handle being sufficient; it produces a more highly-charged gaseous water than is usually obtained from siphons; it compares most favourably in appearance with any, and the metal top being entirely free from lead, the prejudice against siphon drinks is at once removed, as the liquid passes over pure tin only.

All our Syphons are now fitted at the base with a groove, so that drips from the spout that run down the sides are prevented from soiling the table. See drawing.

NOTE.—Syphons made with our patent foot for collecting excess of liquid dripping from the spout after use are supplied at no extra charge, and will be found of great utility in preventing stains, &c., upon table linen. This is a desideratum long been wanting, particularly for private use. Send for sample; forwarded upon receipt of 2s.

Any name, crest, or trade-mark put on the glass by an improved acid process, at from 18s. to 24s. per gross. There is a three-fold advantage in this, as it forms a continual advertisement, is a great ornament, and a preventive of fraud. The plate for engraving costs extra from 5s. upwards, according to the artistic device required.

PRICES (WHITE, BLUE, GREEN, OR AMBER):—

	By the gross,	Less than 1 gross,
	per doz.	per doz.
Quart size	£1 2 0	£1 4 0
Pint size	1 1 0	1 3 0
Half-pint, Pear shape	1 0 0	1 2 0
Octagonal vases, any colour (including Azure Blue)	1 4 0	1 8 0

Tops, nickel-plated, from 5s. 6d. per doz. extra. Tops, silver-plated and burnished, from 9s. per doz. extra. A charge is made for packing, except when ordered in our patent tin cases (holding one dozen each, price 7s. 6d. each).

Please Note.—B. & F. are the only firm manufacturing Syphons in England that do not supply them filled, and so compete with their customers' trade.

BARNETT & FOSTER,

MINERAL WATER ENGINEERS,

Manufacturing Chemists, and General Providers for the Aërated Water Wine, Beer, and Cyder Trades,

"Niagara Works," 26th Eagle Wharf Road, London, N.

Send for Price List of Soda-water Machinery and Accessories.

BEST IN THE MARKET.

A GENUINE

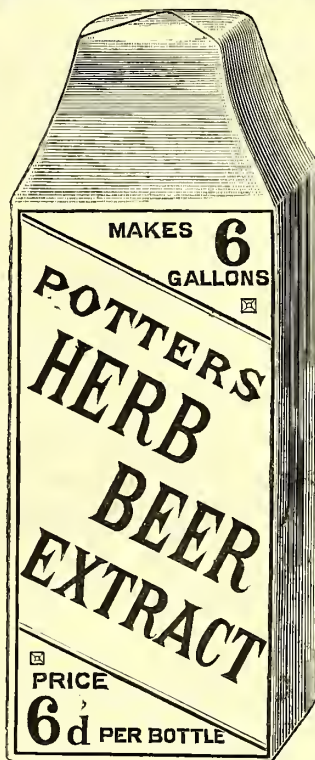
EXTRACT OF HERBS

FOR PRODUCING

A SPLENDID

NON-INTOXICATING ALE

PRICE 3/6 PER DOZEN.



PRICE 3/6 PER DOZEN.

Showcards, Handbills, Puzzle Cards, &c., with all orders.

May be had also in 6d. Bottles, with Customers' name on labels and wrappers, in 2-gross lots, 39s. per gross, carriage paid. IN BULK, 10d. per lb.

SPECIAL QUOTATIONS FOR LARGE QUANTITIES.

To be obtained through any Wholesale House, or of the Proprietors—

POTTER & CLARKE,

WHOLESALE BOTANIC DRUGGISTS,

5, 6 & 7 RAVEN ROW, ARTILLERY LANE, BISHOPSGATE, E.C.

TO THE
CHEMISTS & DRUGGISTS
 OF
GREAT BRITAIN.

TELEGRAPHIC ADDRESS:

St. George's, Middle St.
NORWICH,
December, 1887.

COLEMAN,**GEORGE'S, NORWICH.**

The Excise Authorities having created a difficulty as to the sale of Medicated Wine containing a certain percentage of alcohol, we obtained in January last, from the Inland Revenue Authorities, permission to sell our Liebig's Extract of Meat and Malt Wine, **WITH QUININE**, without a Wine Licence, and many Chemists not holding a Wine Licence have sold considerable quantities. In order further to meet the requirements of the trade, we have introduced a Liebig's Extract of Meat and Malt Wine, **NON-Alcoholic**, made from the juice of the Grape, Liebig's Extract of Meat, and Extract of Malt. This also can be **SOLD WITHOUT A WINE LICENCE**. Your orders will oblige either direct or through the Wholesale Houses.

Yours obediently,

COLEMAN & CO., LIMITED.

N.B.—The Wine is sold in Bottles, 2/9 and 4/6 each.
Trade prices on application.

P.S.—Where the Magistrate's Certificate is not held we are willing to pay the **entire cost of a Retail Certificate** (the holder of which can sell any kind of Wines) if an **assorted order of 6 dozen** is sent us of any of our preparations. List on application. Our Liebig's Extract of Meat and Malt Wine **WITHOUT QUININE** commands a very large sale, and is recommended by over one thousand medical men who have sent us testimonials in its favour.

SOLE MANUFACTURERS—

COLEMAN & CO., LIMITED,**ST. GEORGE'S, NORWICH,****AND 3 NEW LONDON STREET, LONDON, E.C.****EIGHT PRIZE MEDALS AWARDED**

GOODALL'S
HOUSEHOLD
SPECIALITIES.

YORKSHIRE RELISH.

Most Delicious Sauce in the World. Bottles, 6d., 1s., and 2s. each

GOODALL'S BAKING POWDER.

The Best in the World. 1d. Packets; 6d., 1s., 2s. and 5s. Tins.

GOODALL'S EGG POWDER.

One 6d. Tin is equal to 25 eggs. In 1d. Packets; 6d., 1s., and 5s. Tins.

GOODALL'S CUSTARD POWDER.

Delicious Custards without Eggs. In Boxes, 2d., 6d., and 1s. each

GOODALL'S BLANCMANGE POWDER

Delicious Blancmange in a Few Minutes. Boxes, 6d. and 1s. each.

GOODALL'S QUININE WINE, B.P.

Best Tonic yet Introduced. Bottles, 6d., 1s. and 2s. each.

GOODALL'S GINGER-BEER POWDER.

Makes the Best Ginger-Beer. Packets, 3d. and 6d.

GOODALL'S BRUNSWICK BLACK.

For Painting Stoves, Grates, Iron, Tin, &c. 6d. and 1s. Bottles

GOODALL'S LAVENDER WATER.

A Rich and Lasting Perfume. Bottles, 1s., 2s., and 5s. each

GOODALL'S PLATE POWDER.

For Polishing and Cleaning all Metals. Boxes, 6d., 1s. and

GOODALL'S JELLY SQUARES.

Make a Delicious and Nutritious Jelly. In ½- and 1-pint boxes, 3d. and 6d. each.

PROPRIETORS—GOODALL, BACKHOUSE & CO., LEEDS.

PATENT MEDICINES
 AND

DRUGGISTS' SUNDRIES.

Monthly Price List of Patent Medicines, Druggists' Sundries, &c., will be sent post free on application to

GOODALL, BACKHOUSE & CO., LEEDS.

146 MINORIES, LONDON E.C.
New York
Sydney

SODA WATER MACHINERY
AND ALL ACCESSORIES FOR THE TRADE

BRATBY & HINCHLIFFE LIM.

HEAD OFFICE
SANDFORD ST. ANCOATS, MANCHESTER.

BOXES BOTTLES, MACHINERY, ESSENCES.
Catalogues, Circulars, Testimonials Post free

SYPHONS & SELTZOGENES

GREAT REDUCTION IN PRICE.

We have recently been entrusted with a most important Agency for the above-named goods. Our Principals are the best known firm in Paris, and the Syphons are undoubtedly the cheapest and strongest in the market. The tops are made of pure English Tin, guaranteed free from lead. The Seltzogenes are made on the well-known "Fevre" system, and each one is thoroughly tested before being sent out.

WE CAN GIVE TO LARGE AND SMALL BUYERS EXCEPTIONALLY LOW PRICES.
PLEASE WRITE US AT ONCE FOR PRICES, STATING QUANTITY OF EACH KIND REQUIRED

SODA-WATER MACHINERY.

MELBOURNE EXHIBITION, 1889, UNPRECEDENTED SUCCESS.

We have obtained at the above Exhibition

3 HIGHEST AWARDS POSSIBLE

A feat never accomplished before by any other house supplying requirements for the Aërated Water Trade.

These awards will carry with them **THREE GOLD MEDALS**, which were awarded as follows:—

- 1st—SODA-WATER MACHINERY (Highest Award possible).
- 1st—ESSENTIAL OILS & FRUIT ESSENCES (Highest Award possible).
- 1st—PATENT AND ORDINARY BOTTLES (Highest Award possible).

WRITE FOR NEW ILLUSTRATED CATALOGUE, POST FREE.

BRATBY & HINCHLIFFE, LIM.

Aerated Water Engineers and Glass Bottle Manufacturers,

SANDFORD ST., ANCOATS, MANCHESTER,
And at 146 MINORIES, LONDON, E.C.

TO AERATED WATER MANUFACTURERS

HAY'S SOLUBLE ESSENCES

REGISTERED
ARE GUARANTEED TO BE THE FINEST IN THE MARKET

Honourable Mention: International Food Exhibition, Agricultural Hall, London, Oct., 1880. Gold Medal: Soc. of Arts, Paris, 1883

HAY'S SOLUBLE ESSENCE OF JAMAICA GINGER,
A Pure Essence of the Finest Ginger.

Trade Price 5/ per lb.; 12 lbs. and upwards, 4/6.

HAY'S FORTIFIED ESSENCE OF JAMAICA GINGER.

For First Quality Ginger Ale.

Trade Price 5/6 per lb.; 12 lbs. and upwards, 5/.

HAY'S GINGER ALE EXTRACT,

For Second Quality Ginger Ale.

Imparts Pungency, Colouring, great Brilliancy, and an unusually Fine Ginger Flavour and Aroma.

Trade Price 4/6 per lb.; 12 lbs. and upwards 4/.

HAY'S GINGER ALE ESSENCE,

For Third Quality Ginger Ale.

This Essence makes a beverage that is unsurpassed by the so-called finest Belfast Ginger Ale.

Trade Price 9/ lb.; 12 lbs. and upwards, 8/6.

THESE ESSENCES

Have obtained the Highest Testimonials from all the Medical Journals, and from the Principal Trade Journals in this and other countries.

TRADE MARK



REGISTERED

For ORANGE, VANILLA and all other Essences,
SEND FOR PRICE LIST.

HAY'S HOP ALE ESSENCE,

For the manufacture of the Finest Aerated Hop Ale. This Essence is made from the choicest Hops grown, and is unrivalled for its peculiarly fine Hop Flavour and Aroma. Hop Ale made from this Essence has the full flavour of the finest Hops, and is a really appetising Bitter Beer.

Trade Price 8/6 per lb.; 12 lbs. and upwards 8/.

HAY'S SOLUBLE ESSENCE OF MESSINA LEMONS.

No. 1. Highly Concentrated.

Trade Price 8/6 per lb.; 12 lbs. and upwards 8/.

HAY'S SOLUBLE ESSENCE OF MESSINA LEMONS:

No. 2. Makes an exquisitely fine Lemonade.

Trade Price 6/6 per lb.; 12 lbs. and upwards, 6/.

HAY'S LEMON FLAVOUR.

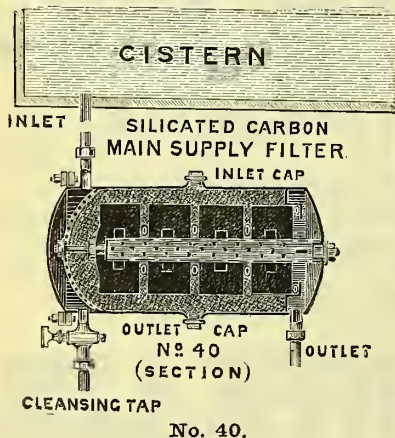
Imparts a Lemonade all the Fine Aroma and Flavour of the choicest Lemons.

Trade Price 5/ per lb.; 12 lbs. and upwards 4/6.

MANUFACTURING
CHEMIST
SEVERLEY ROAD

SILICATED CARBON FILTERS.

PATENT SELF-AERATING
MOVABLE BLOCK

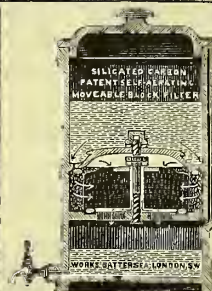


Main Supply Filter

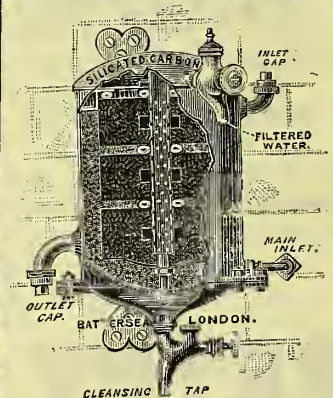
By the use of these Filters, which are of everyday sale, the Flatness of Taste so common in Filtered water is entirely Obviated.



Glass Table Filters.



Domestic Filters.



Constant Supply Filters.

WRITE FOR FULL ILLUSTRATED PRICE LISTS AND TERMS TO THE

SILICATED CARBON FILTER CO., BATTERSEA, LONDON, S.W.

APPOINTMENT of AGENTS UNITED KINGDOM TEA COMPANY, LIMITED.

The Directors are entertaining applications for the Agency for the Sale of the Company's Teas. A liberal Commission will be allowed. The appointments will be found to be most valuable, entailing little, if any, trouble to the Agent, in addition to which, from the very extensive nature of the Company's advertising all over the country, the appointment will be the means of bringing large numbers of customers to him, who, when buying the Teas, will at the same time patronise his general business.

The UNITED KINGDOM TEA COMPANY'S TEAS are of WORLD-WIDE REPUTATION, and are supplied FIRST-HAND direct from the Mincing Lane Market.

Offices—21 MINCING LANE, LONDON, E.C.

DUTY-PAID STORES—

IMPERIAL WAREHOUSE, LEFMAN ST., LONDON DOCKS.

TYRER'S SAUCES AND "BOROUGH" KETCHUP

GOOD
VALUE

THE GIANT 1d. BOTTLE OF SAUCE.
LARGEST IN THE TRADE.
In Half-Gross Boxes, at 6/6 per Gross.*

"BOROUGH" KETCHUP, WORCESTER, HARVEY, YORKSHIRE
OR READING SAUCE.

1d. Sample Bottles, dozen parcels	per gross 5/	extra quality 8/
1d. Giant Bottles, dozen parcels	gross boxes	5/8 "
1d. Giant Bottles, dozen parcels	gross boxes	6/ "
1d. Bottles (flat or round), reputed 1-pint	gross boxes	6/8 "
1d. Bottles (flat or round), reputed pint	gross boxes	18/ "
1-pint Imperial Round Stoppered Bottles	gross boxes	28/ "
1-pint Imperial	gross boxes	30/ "
12-gallon Casks (casks free)	each	60/ "
		22/ "

ROYAL CAFÉ SAUCE.


In 8-oz. square-stoppered bottles, 48/ per gross.
A rich, fruity Sauce of fine flavour, and worth especial attention, as being the most saleable in the market.

Samples of any kind Sent Free of all Cost by

PETER TYRER,
The "Borough" Ketchup and Sauce Maker,
70 LONG LANE, BOROUGH, LONDON, S.E.

SCOTCH AGENCY WEST NILE STREET, GLASGOW.
Also Sold by W. & C. PANTIN, Upper Thames Street, LONDON, E.C.
BURGOYNE & CO. 16 Coleman Street, LONDON, E.C.
JOS. TRAVERS & SONS, 119 Cannon Street, LONDON, E.C.

PEPTONATE OF IRON



SOLE MAKERS

PEPTONE OF MEAT

REGD. TRADE MARK

DENAYER'S

LIQUID PEPTONES

STERILIZED

Free from microbes!
Keep good for ever in all climates.
118 BISHOPSGATE STREET WITHIN, LONDON, E.C.

DENAYER'S PEPTONATE OF IRON. A bland, non-irritating and most easily assimilable ferruginous preparation.
For debilitated constitutions, children, and aged people.

DENAYER'S PEPTONE OF MEAT. A powerful restorative for all ailments of the stomach, stimulates general nutrition. Is retained when the stomach rejects all other food. Pleasant to taste.
Of all Chemists and Wholesale Houses.

WILKINSON'S COMPRESSED

They are introduced to the public to enable them to make their own HOP BITTERS, YEAST, HOME BREWING, and numerous other purposes. Full particulars given in each packet.

Samples and Prices sent on application to

A. WILKINSON & SONS, 37 CANNING PLACE, LIVERPOOL.

P.S.—Chemists will naturally see the great advantage in making their own Bitters from the Pure Hop itself.

Dealers in every description of Isinglass.

"RAMORNIE." LIEBIG'S Extract of Meat.

As supplied to the War and India Offices.

1-lb. Jars.....per lb.	5/2	per doz.	74/0	2-oz. Jars.....per lb.	7/0	per doz.	10/6
1-lb. Jars.....	6/4	"	88/0	1-oz. Jars.....	7/8	"	5/6
4-oz. Jars.....	6/7	"	19/9	4-oz. Jars.....	8/0	"	3/0

QUOTATIONS FOR EXTRACT IN "BULK" ON APPLICATION.

Write for Detailed Price List to the Australian Meat Co., 9 and 11 Fenchurch Avenue, E.C.

8 lbs. Carriage Free.

TO THE CHEMISTS, DRUGGISTS, PATENT MEDICINE VENDORS
THROUGHOUT THE UNITED KINGDOM.

WAKE UP! WAKE UP!! WAKE UP!!!

We wish you to understand that the great "boom" in the Patent Medicine Market during the ensuing season will be

KOPTICA! KOPTICA! KOPTICA!



REGISTERED TRADE MARK.

THE FAMOUS

PERSIAN HERBAL REMEDY

FOR

Rheumatism, Gout, Lumbago, Sciatica,

RHEUMATIC GOUT,



REGISTERED TRADE MARK.

Neuralgia, Face Ache, Tic-Doloreux, Cramp,
AND
ALL KINDRED DISEASES.

MOST of you are aware that **Koptica** was first put on the market about ten years ago, and at once found favour with the public because of its unrivalled efficacy as a curative in all Rheumatic affections. Testimonials poured in from all quarters of the globe, and although **Koptica** has hitherto been by no means extensively advertised, a steady demand has been maintained, mainly through the recommendations of those who have personally tested the

MARVELLOUS EFFICACY OF "KOPTICA."

We are now so thoroughly satisfied as to the intrinsic merits of **Koptica**, that we intend to "boom" **Koptica** as **Koptica** has never been "boomed" before.

COMMENCING EARLY IN OCTOBER,

We shall advertise to such an extent that, in due course, **Koptica** shall be known far and wide. The leading journals will have "bold advertisement" of **Koptica**, and no sufferer from Rheumatic affections shall remain in ignorance as to what **Koptica** is, and where **Koptica** can be obtained. We want every Chemist and Patent Medicine Vendor to keep **Koptica** in stock, because we mean every Chemist to be asked for **Koptica**. We know that you are being asked for **Koptica** now, and that a good many of you can't supply **Koptica** because you don't stock **Koptica**, and then your would-be customer writes to us direct, and says:—"Please send me a bottle of **Koptica**, for which I enclose stamps, with 2d. extra for postage. I tried to get it at my Chemist's, but he said he didn't keep it, and thought you must be dead, as he hadn't seen it advertised lately." Now we want you to understand that we are not dead—we are



ALIVE!

ALIVE!!
AND WE MEAN TO

ALIVE!!!



ADVERTISE, ADVERTISE, ADVERTISE

K O P T I C A,



until **Koptica** is, as **Koptica** deserves to be, the best-known remedy in the market for all Rheumatic affections.

WE SHALL SPEND MONEY FREELY

in advertising **Koptica** during the ensuing season, and so we want you to lay in a little stock, so as to be prepared to supply your customers when you are asked for **Koptica**. We do not, of course, expect you to invest largely in **Koptica** until we have created a demand for **Koptica**; but we shall be glad if you will order just a little—say only three bottles of **Koptica**, which you can obtain from your wholesale house at a cost of about 2s., and then you will be able to supply **Koptica** the very first time you are asked for **Koptica**; thus you will not lose your custom, as some of you do now, by not stocking **Koptica**. Bear in mind that by failing to supply **Koptica** when you are asked for **Koptica**, you lose not only your profit on **Koptica** but also on the other articles that your disappointed customer might purchase—then you cry out that "trade is bad," when, as a matter of fact, trade is better than it has been for years. So

DON'T DISAPPOINT YOUR CUSTOMERS,

Send for, say, three bottles of **Koptica** from your wholesale house, Newbery, Barclay, Sangers, Hovenden, Whiteley, Barker, Sutton, Lynch, Evans & Lescher, Butler & Crispe, Thompson, May Roberts, &c., &c.; all stock **Koptica**, and can supply you with any quantity on the best terms; they can also supply you with handsome show cards and books of testimonials, and we will advertise for you locally, as well as generally. **Koptica** is neatly made up in bottles, which are enclosed in a handsome lithographed outer cartridge, making an attractive addition to the window or counter. The bottles retail at 1s. 1½d., 2s. 9d., and 4s. 6d., and contain respectively 12, 36, and 60 doses, so that **Koptica** has everything in its favour, and is bound to sell; but be sure you lay in a small stock of **Koptica** early in October, so as to be in a position

NOT TO DISAPPOINT YOUR CUSTOMERS.

KOPTICA CURE, 392 Strand, W.C.

Telephone Number, 1852.

Telegraphic Address—CHEMICUS LONDON.

ADVERTISERS' AND BUYERS' REFERENCE LIST AND INDEX TO ADVERTISEMENTS.

ADVERTISEMENTS APPEARING IN THIS ISSUE OF "THE CHEMIST AND DRUGGIST."

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SAUCES, PICKLES Goodall, Backhouse and Co. Tyrer, P.	SCHOOLS, &c. Bailey and Coates Bolingbroke House Central School of Chemistry and Pharmacy Charing Cross Hospital Medical School City School of Chemistry and Pharmacy (Lim.) Guy's Hospital Medical School Liverpool School of Pharmacy London Homoeopathic and Medical School London Hospital and Medical College Manchester College Mason's College Middlesex Hospital Owens College Polytechnic Institute Royal College of Science Royal (Dick's) Veterinary Coll. South London School of Pharmacy, Lim. St. Mungo College The School of Pharmacy University of Bristol University of Edinburgh University of Glasgow Westminster College SOAP Blondeau and Co. (Vinolia) Oblewick Soap Co. Cook, E., and Co. Pearle's Soap SELTZ GENES Bratby and Hinchliffe Evans, Sons and Co. Fevre, T. Gerat, E. and Co. Idris and Co. May, Roberts and Co. SHEEP DIP Fletcher, Bros. and Co. Grindley and Co. Tomlinson and Hayward SHOP FITTERS Bowling and Govier Bygrave, J. and W. Corsan, J. R. Evans, Sons and Co. Howlett, S. Natali, E. (Show Cases) Poths, H., and Co. Trehle, G., and Son Yates, W. S. SPIRIT Burroughs (Pure and Methyl.) Harvey, J. W., and Co. Jonee and Co. (Methyl.) Leslie, J., and Co. Macnair, A., and Co. Macnair, J. and D., and Co. Phillips and Co. Smith, Stephen and Co.	SPONGE Harris and Co. Maw, Son & Thompson (Bags) Peterson M., and Co. SPECTACLES Botwright and Grey Darton, F., and Co. Raphael and Co. STAMPS (RUBBER) Hicklasson, J. Pollard, A. W. STOPPERS Austin and Co. (Sprinklers) Barnett and Foster (The Eclipse) Sanders, H. G., and Son STOVES Clark, S. and Co. SURGICAL Ayrton and Saunders Bailey, W. H., and Son Barclay and Sons (Limited) Cocking, J. T. Eschmann Bros. and Walsh Haywood, J. H. Ingram and Son Liverpool Patent Lint Co. Milne, J. Robinson and Sons Schutze, F., and Co. Thompson, Walters, Hole and Co. (Limited) Woolley, Sons and Co. STARCHE Oritchley (Gloes) SUGAR Gibson, R., and Sons SULFONAL Burroughs, Wellcome and Co. May and Baker SYPHONS Barnett and Foster Bratby and Hinchliffe Favarger and Co. Fevre, T. Gueret, E., and Co. Kliner Bros. Lang, Jules, and Co. Melin, C. SYRUPS Fletcher, Fletcher (Liquors) Iaris and Co. Southwell, C., and Co. TARTARIC ACID Andreae, Oscar and Co. Green, R. W., and Co. TEETHING PADS Marriot, E., and Co.	TILL Stokes, G. R., & Co. (Limited) TIN CANISTERS Noakes, B., and Co. TEA Cave, Johnson and Co. French and Langdale Gt. Tower St. Tea Co. Santha Tea Un ted Kingdom Tea Co. (Ld.) Walker and Dalrymple TOBACCO— CIGARETTES Peacock, M. & R. Taddy and Co. THERMOMETERS Bailey, W. H., and Son Darton, F., and Co. TOILET Foulkes, W. J. Hopgood and Co. Mack, H. Mumford, G. S. Quelch, H. C. Simon, J. Travado, S., and Co. Truelitt, H. P. (Limited) Vigie, L. TOOTH PASTE Jewsbury and Brown Maw, Son and Thompson, S. Quelch, H. C. Sutton, O., and Co. (Block) Wilson, A. (Bunter's) Woods, M. (Aroca) TRADE MARKS Horn and Son TRUSSES Ayrton and Saundere Bailey, W. H., and Son Haywood, J. H. 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1 and 3 KING EDWARD STREET,

LONDON, E.C., September, 1889.

WE desire to intimate that the preparation of our Catalogue for the coming year, 1890—the tenth annual issue—is already commenced.

Copy will be placed in the printer's hands in good time for the work to be in circulation early in 1890.

This notice is issued in order that Manufacturers of goods imported and sold by us may forward timely notice of intended alterations and additions.

“NEWBERY'S CATALOGUE” is widely circulated, and, therefore, well known in all parts of the Commercial World. The current year's issue comprises nearly 600 pages of information of use to Druggists, Medicine Vendors, &c., in addition to the Medicine Act and observations thereon, whilst the corrections, additions, &c., as compared with the former issue, are upwards of 1,500.

F. NEWBERY & SONS.

Agents for British and Foreign Medicines and Proprietary Goods.

ESTABLISHED A.D. 1746.

PERFUME SPRINKLERS,

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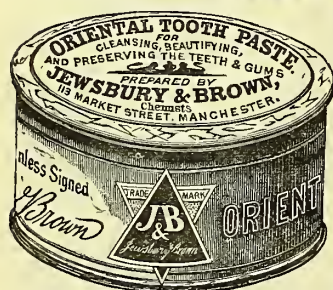
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JEWSBURY & BROWN'S

ORIENTAL TOOTH PASTE.



This old-established and increasingly favourite Dentifrice has been over Sixty Years before the Public. It is warranted to retain its properties and keep in good condition in any climate. The original and only genuine is manufactured solely by

JEWSBURY & BROWN, Chemists, MANCHESTER,

and is distinguishable by the Trade Mark, printed in red and green, a facsimile of which is annexed. Particular attention should be paid to this guarantee of genuineness, as numerous imitations are offered. Sold universally by Chemists and Perfumers, at 1s. 6d. and 2s. 6d.

The Trade and Shippers supplied by the leading houses in London and elsewhere. Bills and Show Cards forwarded on receipt of address cards and directions for enclosure

JOHN SANGER & SONS' ILLUSTRATED PRICE CURRENT

Will be sent post free upon receipt of business card. It has been carefully revised to date, and contains a most varied and complete list of all kinds of PROPRIETARY MEDICINES,



DRUGGISTS' SUNDRIES, LOZENGES, MINERAL WATERS, and TOILET REQUISITES. In comparing with other lists, do not forget the discounts, viz., 10 per cent. and 5 per cent. one month.

SAMPLE ORDERS FOR ALL KINDS OF DRUGGISTS' SUNDRIES, SPONGES, &c., WILL RECEIVE EVERY ATTENTION.

A Register kept for the convenience of Customers requiring Assistants & Assistants wanting Situations.

JOHN SANGER & SONS, 489 OXFORD ST., LONDON, W.

KEARSLEY'S Widow Welch's FEMALE PILLS.

These are universally acknowledged to be the Genuine, and Druggists may safely recommend them.

CAUTION!

The Proprietors of Kearsley's Original Widow Welch's Female Pills find it incumbent on them to caution the purchasers of these Pills against various imitations by parties who have no knowledge of their peculiar preparation, the Original Recipe having been sold to the late G. Kearsley, of Fleet Street, whose Widow found it necessary to make an affidavit, for the protection of her property, in the year 1798. The Genuine Recipe for Widow Welch's Female Pills has been prepared by them for 100 Years! Chemists are particularly requested to remark that, as a testimony of authenticity, each bill of directions contains an affidavit, and bears the signature of "G. KEARSLEY," in writing, also engraved on the Government Stamp, and each box is wrapped in WHITE paper.

Price 27s. per Dozen, subject to usual Discount. Special Quotations to Shippers and for large quantities on application to

J. SANGER & SONS, 489 OXFORD STREET, LONDON, W.

THE VERDICT. { Facts and Figures.

SEPTEMBER 21st.



Barley Malt v. Mixed Grains.

The world of scientific maltsters to a man is dead against the mixture of inferior grains (humorously styled the "wild (cat) oats") as compared with the Kepler Barley-Malt Extract. The carbo-hydrates, the main essential in making extract of malt, are forgotten in the craze to boom vegetable albumen.

No sensible authorities claim that other grains can compare with barley for malting, and the manufacturers who advise differently are in a like predicament with the fox who lost his tail in a trap, and enjoined upon his companions the advisability of having their appendages cut off.

Awhile ago the quantity of albuminoids in wheat and oats as given by Muspratt was compared with that in barley as given (not by Muspratt, but) by Blyth. This manner of picking statistics was pointed out by us, and the table corrected as follows (our *Lancet* page, Dec. 8, 1888):—

NITROGENOUS MATTERS IN BARLEY, AND "WHEAT AND OATS." LOSS OF 39.

NITROGENOUS MATTERS IN BARLEY.	AVERAGE IN "WHEAT AND OATS."
 15.	14.61 

Our own original table (see our *Lancet* page, Nov. 24, 1888) was composed with figures from Blyth. Here it is:—

NITROGENOUS MATTERS IN BARLEY AND SUBSTITUTION MIXTURE—NO GAIN.

NITROGENOUS MATTERS IN BARLEY.	MIXTURE "WHEAT AND OATS" TO BE SUBSTITUTED FOR BARLEY.
12.1	12.075

But here is the most astonishing table of all (from our *Lancet* page, October 27, 1888):—

CARBO-HYDRATES IN BARLEY, WHEAT AND OATS.

BARLEY.	WHEAT. 251 Analyses.	OATS (Ground).
82.2	67.89	55.43

It is said "if we turn from the opinions of

authorities"—but we should not turn from them. We should face them. Here they are:—

One authority writes:—"Barley has been prepared for the purpose of malting from time immemorial. Its adaptation to this use depends partly upon the structure of the grain, which is such that its husk affords protection to the sprout or acrospire during germination, thus preventing its becoming blighted. Barley also contains a larger proportion than any other cereal of *soluble albuminoids* and of soluble phosphates; both of these substances, according to Liebig and Von Bibra, preserving a constant relation."

Muspratt says:—"Any of the cereals may be employed in the preparation of malt, *but barley is preferred* for this purpose because experience has demonstrated that it contains the largest percentage of diastase."

Bersch says:—"In the manufacture of malt, those grains only are used in which during germination *diastase* is developed, and among them *barley takes the first rank.*"

Müller says:—"Other grains, such as wheat, oats, rye, and even Indian corn may be malted, but *experience has shown that barley is the grain best adapted to the process.* It yields the largest quantity of diastase."

GENERAL.

Parkes says:—"Barley contains rather more protein bodies than wheat;" and Muspratt states "that the great variations found in wheat do not occur in barley." Exceptional Russian or American wheats do not affect the question, and even they vary widely; nor do exceptional barleys affect it. Barley "is certainly very nutritious, and the Greeks trained their athletes on it. Its richness in phosphoric acid and iron renders it particularly adapted for this" (Parkes). "In the time of Charles I. barley meal almost entirely took the place of wheat as the food of the common people, especially in the North of England" (Blyth). Wheat not only falls far below barley in carbo-hydrates, but is "deficient in fat and in vegetable salts which may form carbonates in the system" (Parkes). "Oats are a good all-round food," for they contain 6 per cent. of oil, a fair amount of proteids, and they are half starch, &c.; but, of course, the oil is of no account in malting.

VERDICT.

The *Lancet* reports that "Kepler Extract of Malt is the best"; the *Med. Times & Gazette*, "by far the best"; the *Med. Record*, "undoubtedly the best"; the *Med. Press*, "delicious to the taste."

Kepler Extract of Malt and Kepler Extract of Malt with Cod Liver Oil (Kepler Solution) supplied to the Trade in $\frac{3}{4}$ -lb. and $1\frac{1}{2}$ -lb. bottles, at 22s. and 38s. per dozen. Retail prices, 2s. 6d. and 4s.

BURROUGHS, WELLCOME & Co., Snow Hill Buildings, LONDON, E.C.

PHARMACY UP TO DATE.

THE LIST AND FORMULÆ ARE WORTH PRESERVING FOR REFERENCE.

List of New Pharmaceutical and Sanitary Products, Apparatus, &c., introduced to the Medical Profession and Chemists by

BURROUGHS, WELLCOME & CO.,

SNOW HILL BUILDINGS, LONDON, E.C.

Prescribed and Used by the Medical Profession, and supplied by Wholesale and Dispensing Chemists throughout the World.

Agents for—ALFRED BISHOP & SONS, London; BENNO JAFFÉ, & DARMSTAEDTER, Martinikenfelde, Germany; COLGATE & CO., New York; FAIRCHILD BROS. & FOSTER, New York; FELLOWS' MED. MANUFACTURING CO., New York; JOHN WYETH & BRO., Philadelphia; LANMAN & KEMP, New York; MEISTER, LUCIUS, & BRUNING, ANTIPYRINE—Hoechst a/m; YOUNG & LADD, New York. *Wholesale Consignees for* SALOL from Successors to Dr. F. VON HEYDEN & CO. *Wholesale Depot for* SULPHONAL (BAYER), and SYMES' LAC BISMUTHI.

Absorbent Cotton (Lawton), 2 oz., 8/ doz.; 4 oz., 12/6 doz.; 16 oz., 36/ doz.
 Alpine Cologne (Fragrant and Antiseptic), 2 oz., 8/; 4 oz., 18/; 8 oz., 30/ doz.
 Antipyrin, Powder, Crystals, 3/5 oz., and 5 gr. Tabloids.
 Antipyrin, Effervescent (Bishop), 50/ per doz.
 Artificial Sponges (B. W. & Co.), 24/ per gross.; Plain, 18/
 Atomisers, Steam (Codman & Shurtleff's), 18/9
 Beef and Iron Wine. Dose, 2 to 4 dr., $\frac{1}{2}$ lb. bottles, 22/; 1 lb., 42/ doz.
 Caffein Citrate (Bishop's Effervescent), 20/ doz.
 Caffein Hydrobromate (Bishop's Effervescent), 20/ doz.
 Cashmere Bouquet Soap (Colgate & Co.), 10/ doz.
 Cashmere Bouquet Extract (Colgate & Co.), 1 oz., 22/ doz.; 2 oz., 30/9 doz.
 Colgate's Emollient Shaving Soap, sticks, 5/6 doz.; cakes, 3/3 doz.
 Chlorodyne (New Formulæ), 1 oz., 14/ doz.; 16 oz., 96/ doz.
 Cod Liver Oil (Kepler), 'Pure and Palatable,' 8 oz., 16/; 16 oz., 24/ doz.
 Dialysed Iron (Wyeth), 4 oz., 27/ doz.; 1 lb., 42/ per doz.
 Drug Mill (B. W. & Co.), 36/ 54/ 90/ each.
 Ear Drums, Ward Cousin's Artificial Antiseptic, 8/ per doz. boxes.
 Elixoids (or Palatable Mixtures), 8 oz. and 1 lb. bottles.
 'Etna' Stoves, 20/ each.
 Eucalyptia (Eucalyptine). Pure oil E. Globulus, 2 oz., 15/ doz.; 1 lb., 72/
 Fairchild Preparations:
 Pepsin in Scales (Pure), $\frac{1}{2}$ oz., 20/; 1 oz., 60/ per doz.
 Pepsin, Powdered (Pure), $\frac{1}{2}$ oz., 20/; 1 oz., 60/ per doz.
 Zymine (Ext. Pancreatis), Pure, $\frac{1}{2}$ oz., 20/; 1 oz., 60/ per doz.
 Zymine Peptonising Powders, 12 tubes in box, 18/ doz. boxes.
 Pepsin Tabloids, 25 in bot., 14/; 100 in bot., 42/ doz.
 Zymine Tabloids, 25 in bot., 18/; 100 in bot., 48/ doz.
 Zymine Comp. Tabloids, 25 in bot., 18/; 100 in bot., 48/ doz.
 Zymised Suppositories (Meat) 12/ per doz. boxes.
 Zymised Suppositories (Milk) 12/ per doz. boxes.
 Trypsin, Pure. Solvent for Diphtheritic Membrane. 1 drachm bots., 54/ doz.
 Peptonising Apparatus, 10/ each.
 Feeding Bottle Patent Thermo Safeguard, 1/ size, 9/ doz.; 1/6 size, 12/ doz.; 2/6 size, 22/ doz.
 Fellows' Syr. Hypophosphites, lbs., stamped, 7/; less than 1 doz., 66/; per doz., 60/; unstamped, 12/ doz. less; $\frac{1}{2}$ lb. 4/; less than 1 doz., 38/; 1 doz., 34/; unstamped, 6/ per doz. less; special terms for large quantities. Net prices.
 Florida Water (Murray & Lanman), 26/ 13/6 8/ doz.
 Hazeline. (Best preparation of Hamamelis), 4 oz., 14/ doz.; 1 lb., 42/ doz.
 Hypodermic 'Tabloids' (Compressed Drugs), in tubes, containing from 12 to 20 Tabloids, 12/ per doz.
 Aconitin (Duquesnel), 1/260 gr.
 Apomorphia Hydrochlorate, 1/10 gr. and 1/15 gr.
 Atropia Sulphate, 1/150 gr., 1/100 gr. and 1/60 gr.
 Caffein Sodio-Salicylate, 1/2 gr.
 Cocain Hydrochlorate, 1/6 gr., $\frac{1}{4}$ gr., and 1/2 gr.
 Codeine Phosphate, 1/4 gr.
 Colchicin, 1/100 gr.

Hypodermic Tabloids—continued.

Cornutin, 1/60 gr.
 Curare, 1/12 gr.
 Digitalin, 1/100 gr.
 Ergotin, 1/150 gr. and 1/300 gr.
 Eserin Salicylate, 1/100 gr.
 Homatropin Hydrochlorate, 1/250 gr.
 Hydrag. Perchlor., 1/60 gr. and 1/30 gr.
 Hyoscine Hydriodate, 1/200 gr. and 1/75 gr.
 Hyoscyamin Sulphate (Merck), 1/80 gr. and 1/20 gr.
 Morphia Bi-Meconate, 1/8 gr., 1/6 gr., 1/4 gr., and 1/3 gr.
 Morphia Hydrochlorate, $\frac{1}{4}$ gr.
 Morphia Sulphate, 1/12 gr., 1/8 gr., 1/6 gr., 1/4 gr., 1/3 gr., and $\frac{1}{2}$ gr.
 Morphia Sulphate, 1/12 gr., with Atropia Sulphate, 1/250 gr.
 Morphia Sulphate, 1/8 gr., with Atropia Sulphate, 1/200 gr.
 Morphia Sulphate, 1/6 gr., with Atropia Sulphate, 1/180 gr.
 Morphia Sulphate, 1/4 gr., with Atropia Sulphate, 1/150 gr.
 Morphia Sulphate, 1/3 gr., with Atropia Sulphate, 1/120 gr.
 Morphia Sulphate, 1/2 gr., with Atropia Sulphate, 1/100 gr.
 Pilocarpin Hydrochlorate, 1/10 gr., 1/3 gr., and 1/2 gr.
 Quinine Hydrobromate, 1/2 gr.
 Sclerotinic Acid, 1/2 gr. and 1 gr.
 Strychnia Sulphate, 1/150 gr., 1/100 gr., and 1/60 gr.
 Strophanthin, 1/500 gr.
 Hypodermic Needles and Mounts, 1/4 each.
 Hypodermic Syringes, 7/ each; solid silver in case, 10/ each.
 Hypodermic Pestle and Mortar, 3d. each.
 Hypodermic Pocket Cases (B. W. & Co.) for 6 to 12 tubes, 5/ each; fitted complete with syringe, &c., and 6 tubes, 12/ each; ditto and 12 tubes, 15/; 12 tubes and silver syringe, 20/
 Ichthyol and Preparations.
 Inhaler, Chloride of Ammonium (Vereker), 90/ doz.
 Kepler Extract of Malt, $\frac{3}{4}$ lb., 22/ doz.; 1 $\frac{1}{2}$ lb., 38/ doz.
 Kepler Extract of Malt Combinations.
 Kepler Solution of Cod Liver Oil in Malt, $\frac{3}{4}$ lb., 22/; 1 $\frac{1}{2}$ lb., 38/ doz.
 'Lanoline' (Liebreich), 2/8 per lb.; 1 lb. and 7 lb. tins.
 " Anhydrous, 3/4 lb.
 " Ointment Base, 2/2 lb.
 " Cold Cream, 14/ doz.
 " Pomade, 14/ doz.
 " Soap, 8/ doz.
 " Eucalyptine Soap, 8/ doz.
 " Mercurial Ointment, 33 $\frac{1}{3}$ per cent., 4/6 lb.
 " Veterinary Ointment, for Hoof and Hide, 2/1b.
 Toilet Lanoline, 4/6 doz.
 Lundborg's Perfumes, 1 oz., 19/3 2 oz., 30/9.
 Medicine Cases. } (B. W. & Co.) Various prices accord-
 Medicine Chests. } ing to size.
 Medicine Droppers, 2/ and 3/ doz.
 Menthol Plasters (with racks), 7/9 doz. } stamped.
 Menthol Plaster, in 1 yd. rolls, 42/ doz.
 Nux Vomica Extract (Bishop's Effervescent), 12/
 Paper-Fibre Lint (for Surgeons and Dentists), $\frac{1}{2}$ lb., 30/ doz.; 1 lb., 48/ doz.
 Pepsin Saccharated. Dose, 5 to 15 grs., 1 oz., 22/ doz.
 Pharmaceutical Stills (Remington), 3 galls., 170/; 5 galls., 200/ each.

BURROUGHS, WELLCOME & CO., Snow Hill Buildings, London,

Who will be happy to supply trial specimens free to Medical Men and Chemists on request.

PHARMACY UP TO DATE.

THE LIST AND FORMULE ARE WORTH PRESERVING FOR REFERENCE.

(Continued from page 34, bottom folio.)

Pinol (Essentia Pinus Pumilionis Pura), 15/ and 24/ doz. bottles.
 Pinol Extract (for Balms, Plasters, &c), 9/ doz.
 Pinol Inhalers, 14/ per doz.
 Pinol Pastilles, 9/ doz.
 Pinol Atomisers, 10/ each.
 Prescription Books, 2/ doz.; leather covers, 1/; Russia leather, 3/6.
 Remington's 'Pharmacv,' 21/ each.
 Saccharin, 'Soluble,' (B. W. & Co.) 90 per cent., ¼ oz. bot., 14/ doz.; also in Powder and Tabloids.
 Salol, in Crystals, 1/3 oz., and 5 gr. Tabloids.
 Strophanthus Tincture, ½ oz., 4/; 1 oz., 6/ doz.; per lb, 6/; and 'Tabloids.'
 Sulphonal, in Crystals, 1/6 per oz., and 5 gr. Tabloids.
 Symes' Lac Bismuthi. Dose, 1 drachm in water, 8 oz., 24/; 1 lb., 48/.
 Symes' Lac Bismuthi et Cerii. Dose, 1 drachm in water, 8 oz., 30/; 1 lb., 60/ doz.
 Symes' Ol. Lavand. Rect., 8 oz., 126/ doz.; 1 lb., 252/ doz.
 Symes' Urethral Irrigator (*Harrison's*), 78/ doz.
 Symes' Syr. Hydrobrom. Dose, 1 drachm, 8 oz., 30/ doz.
 'Tabloids' and 'Tablets' (*Trade Marks*) of Compressed Drugs.
 Aconite Tinct., 1 min. 100 in bottle, 8/6 per doz.
 Aloin, 1-10 gr. 100 in bottle, 8/6 per doz.
 Ammon. Bromide, 5 gr., 100 in bottle, 22/ doz.; 10 gr., 100 in bottle, 32/ doz. Dose, 1 or 2.
 Ammon. Chloride, 3 gr. ovals, 4/6 doz.; 100 in bot., 12/6 doz.; 5 gr. 100 bot., 18/ doz.; 10 gr., 100 bot., 22/ doz. Dose, 1 slowly dissolved.
 Ammon. Chlor. with Borax. 100 in bot., 22/ doz. Dose, 1 slowly dissolved.
 Anti-constipation. 50 in each, 8/6 per doz.
 Antifebrin, 2 gr. Dose, 1 to 6. 25 in bot., 12/6 doz.; 100 in bot., 24/ doz.
 Antipyrin, 5 gr. Dose, 3 to 6. 25 in bot., 18/ doz.; 100 in bot., 54/ doz.
 Bismuth Subnitrate, 5 gr., 100 in bot., 28/ doz.; 10 gr., 100 in bot., 42/ doz. Dose, 2 to 4 after meals.
 Blue Pill, 3 grs.
 Caffeine Citrate, 1 gr. Dose, 2 or 4. 100, 35/ doz.
 Cascara Sagrada Ext., 2 gr. Dose, 1 or 2. 24 in oval bot., 7/6 doz.; 100, 22/ doz.
 Cascara Comp.—Cascara (1 gr. dry ext.), Euonymin (1 gr.) and Nux. Vom. (1-16 gr.) Dose, 1 to 4. 25 in oval bot., 14/ doz.; 100, 48/ doz.
 Cathartic Comp., U.S.P. Dose, 1 to 3. 24 in oval bot., 7/6 doz. 100, 18/ doz.
 Charcoal, 5 gr. Dose, 2 to 6 or more. In oval bot., 7/6 doz.; 100, 14/ doz.
 Chloral Hydrate, 5 gr. Dose, 2 to 3. 100 in bot., 24/ doz.
 Cocaine with Potash and Borax (*Voice*). Dose, 1 slowly dissolved 30 in oval bot., 8/6 doz.; 80 in box, 16/ doz.
 Creta Aromat. c. Opio, 5 grs.
 Ipecac. and Opium (*Dover's Powder*), 5 gr. Dose, 1 to 4. In oval bot. of 24, 8/6 doz.; 100 in bot., 32/ doz.
 Ipecac. Powder, 5 gr. Dose, 2 dissolved in water as an emetic. 100 in bot., 16/ doz.
 Iron and Quinine Citrate, 3 gr. Dose, 1 to 4. 25 in bot., 8/6 doz.; 100 in bot., 32/ doz.
 Laxative Vegetable. Dose, 1 or 2. 25 in oval bot., 7/6 doz.; 100 in bot., 18/ doz.
 Lithia carbonate, 2 gr. Dose, 2 or 3 thrice daily. 100 in bot., 32/ doz.
 Manganese Dioxide, 2 gr. Dose, 1 to 5. 25 in bot., 8/6 doz.; 100, 32/ doz.
 Nitro-Glycerine (Trinitrine), 1-100 and 1-50 gr. Dose, 1. 25 in oval bot., 7/ doz.; 100, 18/ doz.
 Pepsin Pure, 1 gr. Dose, 1 to 5. 25 in oval bot., 14/ doz.; 100, 42/ doz.
 Pepsin Saccharated, 5 gr. Dose, 1 to 3. 100 in bot., 32/ doz.
 Peptonic. Dose, 1 or 2 after meals. 25 in oval bot., 14/ doz.; 100 in bot., 48/ doz.
 Potash Bicarb., 5 gr. Dose, 1 to 4. 40 in oval bot., 4/6 doz.; 100 in bot., 12/6 doz.
 Potash Chlorate, 5 gr. 40 in box, 4/; 40 in oval bot., 4/6 doz.; 100, box or bot., 8/6 doz. Dose, 1 slowly dissolved in the mouth.

'Tabloids' and 'Tablets'—continued.

Potash Chlorate with Borax. Dose, 1 slowly dissolved in the mouth. 40 in box, 4/ doz.; 40 in oval bot., 7/6 doz.; 100 in box or bot., 8/6 doz.
 Potash Nitrate (*Sal Prunella*). Dose, 1 slowly dissolved in the mouth. 100 in bot., 14/ doz.
 Potash Permanganate, 1 gr., 100 in bot., 18/ doz.; 2 gr., 100 in bot., 32/ doz. Dose, 1 or 2.
 Potassium Bromide, 5 gr., 100 in bot., 18/ doz.; 10 gr., 100 in bot., 32/ doz. Dose, 1 or 2.
 Potassium Iodide, 5 gr. Dose, 1 or more with meals. 100 in bot., 36/ doz.
 Quinine Bisulphate (soluble), ½ gr., 50 in oval, 8/ doz.; 100, 12/ doz.; 1 gr., 36 in oval, 8/ doz.; 100, 15/ doz.; 2 gr., 24 in oval, 8/ doz.; 100, 19/ doz.; 3 gr., 24 in oval, 12/ doz.; 100, 27/ doz.; 5 gr., 24 in oval, 16/; 100, 43/6 doz.
 Quin. Bisulph., 1 gr.
 Iron Hypophos., 2 gr. } Dose, 1 thrice daily after meals, swallowed or previously dissolved in water.
 Arsenic, 1/50 gr. }
 Strych. Sulph., 1/50 gr. } 100 in bot., 36/ doz.
 Saccharin, 1/100 gr.
 Rhubarb Comp., 3 gr. Dose, 1 to 5. 24 in oval box, 7/6 doz. 100, 22/ doz.
 Rhubarb and Soda, 5 gr. Dose, 1 to 5. 24 in oval, 7/6 doz.; 100, 22/ doz.
 Rhubarb, 3 gr. Dose, 2 to 4. 24 in oval, 7/6 doz.; 100, 22/ doz.
 Saccharin, ½ gr. 25 in tube, 4/ doz.; in oval bot. of 200, 15/.
 These contain 90 per cent. pure Saccharin. Substitute for sugar in diabetes.
 Salol, 5 gr. Dose, 1 or 2. 100 in bot., 36/ doz.
 Soda Bicarbonate, 5 gr. Dose, 1 to 6. 40 in oval bot., 4/6 doz.; 100, 12/6 doz.
 Soda-Mint (or '*Neutralising Tabloid*'). Dose, 1 to 4. 25 in oval, 7/6 doz.; 100, 18/ doz.
 Soda Salicylate, 3 gr., 100 in bot., 23/ per doz.; 5 gr., 100 in bot., 38/ doz. Dose, 1 to 4.
 Sodium Bromide, 5 gr., 100 in bot., 18/; 10 gr., 100 in bot., 32/ doz. Dose, 2 to 4.
 Sodium Iodide, 5 gr. Dose, 1 or more with meals. 100 in bot., 48/ doz.
 Strophanthus (2 minims of Tincture in each). 50 in oval bot., 8/6 doz.
 Sulphonal. Dose, 1 to 4. 25 in bot., 12/ doz.; 100, 36/ doz.
 Tannin. Dose, 1 or more as a styptic. 100 in bot., 22/ doz.
 Test Tabloids (for preparing Fehling's Solution). Test for sugar. 18/ doz.
 'Thirst Tabloids' (contain citric acid, &c.), 25 in bot., 7/6 doz.; 100 in bot., 14/ doz.
 Tonic Comp. { Iron Pyrophos., 2 gr. } Dose, 1 with meals.
 { Quinine 1 gr. }
 { Strychnine, 1-100 gr. }
 25 in oval bot., 12/6 doz.; 100, 35/ doz.
 Trinitrine (*Nitro-glycerine*), 1-100 gr. and 1-50 gr. Dose, 1. 25 in oval, 7/ doz.; 100, 18/ doz.
 Trinitrine and Amyl Nitrite. Dose, 1. 25 in oval, 12/ doz.; 100, 36/ doz.
 Trinitrine Comp. { Trinitrine, 1-100 gr. } Dose, 1.
 { Nitrite of Amyl, ½ gr. }
 { Capsicum, 1-50 gr. }
 { Menthol, 1-50 gr. }
 25 in oval, 12/ doz.; 100, 35/ doz.
 Urethane, 5 gr. Dose, 1 to 4. 25 in bot., 16/ doz.; 100, 40/ doz.
 Voice (Potash, Borax, Cocaine). Dose, 1 slowly dissolved. 30 in box, 8/ doz.; 80 in box, 16/ doz.
 Zinc Sulphate, 1 gr., 100 in bot., 18/ doz.
 „ Sulpho-carbolate, 2 gr., 100 in bot., 18/ doz.
 Zymine (3 grs. Ext. Pancreatis). 25 in bot., 18/ doz.; 100, 48/ doz.
 „ Comp (Ext. Pancreatis, Ipecac., and Bismuth Subnitrate). 25 in bot., 18/ doz.; 100, 43/ doz.

'Tabloids' of Triturated Drugs:

In bottles of 100, 8/6 doz., and tubes of 25, 4/6 doz.

Aconite Tinct., 1 min.
 Arsenious Acid, 1/100 gr. and 1/50 gr.
 Belladonna Tinct., 1 min.
 Calcium Sulphide, 1/10 gr.
 Capsicum Tinct., 1 min.
 Digitalis Tinct., 1 min.
 Hydrarg. Perchlor., 1/100 gr.
 Hydrarg. cum Creta (*Grey Powder*), 1/3 gr.
 Hydrarg. Subchlor. (*Calomel*), 1/10 gr.
 Hyoscyamus Tinct., 1 min.
 Nux Vomica Tinct., 1 min.
 Tinct. Camph. Co. (*Paregoric*), 2 min.

BURROUGHS, WELLCOME & CO., Snow Hill Buildings, London,

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PHARMACY UP TO DATE

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(Continued from page 35, bottom folio.)

'Tabloids' of Triturated Drugs—continued.

In bottles of 50 and tubs of 25—

Anti-constipation { Aloin, 1/5 gr.
Belladonna Ext., 1/8 gr.
Strych., 1/6 gr.
Ipecac., 1/16 gr.

Apomorphine Muriate, 1/50 gr.

Atropin Sulph., 1/100 gr.

Digitalin, 1/100 gr.

Euonymin Resin, 1/8 gr.

Hydrarg. Iod. Rub., 1/20 gr.

Hydrarg. Iod. Vir., 1/8 gr.

Morphine Sulphate, 1/20 gr. and 1/8 gr.

Opium Tinct. (Laudanum), 2 min.

Pilocarpine Muriate, 1/20 gr.

Podophyllin (Resin), 1/4 gr.

Santonin, 1/2 gr.

Strophanthus Tinct., 2 min.

Leather Pocket Case No. 22 to contain 10 tubes, empty 1/6, fitted 5/ each

" " No. 23 " 16 " " 2/6 " 8/6 "

" " No. 24 " 24 " " 7/ " 14/ "

Tampons (Vaginal, &c.), 36/ gross.

Terebene, Pure (Burroughs), 1 oz., 8/6; 2 oz., 12/; 8 oz.,

24/; 16 oz., 45/ doz.

Tincture Press (B., W. & Co.), 11/ and 13/ each.

Valoid Fluid Extracts :

Equivalent Liquid, or Fluid Extracts, of Definite Standard

Strength.

Each pound of valoid represents the medicinal properties of one pound of pure drug, inclusive of *alkaloid, resinoid, or other active principles.*

The drugs are first assayed, tested, or critically examined, those of inferior quality or deficient in amount of active principles being discarded, and those only employed which are of full standard strength

Our process of cold repercolation completely exhausts the drug of all medicinal properties, and the menstruum employed is such as to hold them permanently in solution and preserve them indefinitely in any climate.

Valoids are the *most convenient and reliable* form of drug for the preparation of Tinctures, Syrups, Decoctions, Infusions, &c. In every case the Valoid Extract may be taken as the exact equivalent of the drug.

Aconite Root. Dose, 1 to 2 min. 4 oz., 2/3; 1 lb., 8/ each.

(*Aconitum Napellus*)

One to seven rectified spirit makes the Tinctura Aconiti, B.P.

Actæa Racemosa. Dose, 10 to 30 min. 4 oz., 2/3; 1 lb., 8/ each.

(*Cimicifuga Racemosa, Black Cohosh.*)

One in seven proof spirit makes Tinct. Cimicifugæ, B.P.

Arnica Root. Dose, 5 to 20 min. 4 oz., 2/; 1 lb., 7/ each.

(*Arnica Montana.*)

One to nineteen rectified spirit makes Tinct. Arnicæ, B.P.

Bael Fruit. Dose, 1 to 2 min. 4 oz., 2/; 1 lb., 7/ each.

(*Egle Marmelos.*)

Belladonna Leaves. Dose, 2 to 3 m. 4 oz., 2/3; 1 lb., 8/ each.

(*Atropa Belladonna.*)

One to nineteen rectified spirit makes Tinct. Belladonnæ, B.P.

One to one chloroform makes a very useful application to be applied on Burroughs' Paper-Fibre Lint; is more useful and decidedly cleaner than Belladonna Plaster.

Blackberry. Dose, 1 to 1 min. 4 oz., 2/3; 1 lb., 8/ each.

(*Rubus Villosus.*)

Black Haw. Dose, 10 to 30 min. 4 oz., 2/6; 1 lb., 8/6 each.

(*Viburnum Prunifolium*)

One to five Kepler Malt Extract makes Malt and Viburnine.

Black Willow. Dose, 1 to 1 drachm. 4 oz., 2/; 1 lb., 7/ each.

(*Salix Nigra.*)

Boldo Leaves. Dose, 10 to 20 min. 4 oz., 2/7; 1 lb., 9/ each.

(*Boldoa Fragrans*)

One to four rectified spirit makes Tinct. Boldo.

Bryony. Dose, 5 to 30 min. 4 oz., 2/; 1 lb., 7/ each.

(*Bryonia Alba.*)

One to seven proof spirit makes Tinct. Bryoniæ.

Buchu. Dose, 1 to 2 min. 4 oz., 2/; 1 lb., 7/ each.

(*Barosma betulina.*)

One to seven proof spirit makes Tinct. Buchu, B.P.

Half-ounce in 10 oz. distilled water makes Infusum Buchu, B.P.

Butternut. Dose, 20 to 60 min. 4 oz., 2/3; 1 lb., 8/ each.

(*Juglans Cinerea.*)

Calumba. Dose, 1 to 1 drachm. 4 oz., 1/3; 1 lb., 6/ each.

(*Zateorrhiza Calumba.*)

One to seven proof spirit makes Tinct. Calumbæ, B.P.

Half-ounce in 10 oz. in distilled water makes Infusum Calumbæ, B.P.

Valoid Fluid Extracts—continued.

Cannabis Sativa. Dose, 2 to 5 min. 4 oz., 3/; 1 lb., 12/ each.

(*Indian Hemp.*)

Five to seventeen rectified spirit makes Tinct. Cannabis Indica, B.P.

Capsicum. Dose, 2 to 5 min. 4 oz., 2/3; 1 lb., 8/ each.

(*Capsicum Fastigiatum*)

One to twenty-six rectified spirit makes Tinct. Capsicæ, B.P.

One to seven Lanoline, or sprinkled on Burroughs' Paper-fibre

Lint, as good rubefacient in place of mustard-plaster, &c.

Cascara Sagrada (or Tasteless). Dose, 10 min. to 1/2 drachm. 4 oz.,

2/1; 1 lb., 7/6 each.

(*Rhamnus Purshiana*)

Free from all inert matter, and containing all the valuable constituents of the bark, *entirely devoid of excessive bitterness*, miscible with water, &c.

Catechu. Dose, 5 to 30 min. 4 oz., 2/3; 1 lb., 8/ each.

(*Uncaria Gambier*)

Chamomile. Dose, 1 to 1 drachm. 4 oz., 2/3; 1 lb., 8/ each.

(*Anthemis Nobilis Chamomile.*)

(Half-ounce in 10 oz. distilled water makes Infusion of Chamomiles.

Chiretta. Dose, 1 to 1 drachm. 4 oz., 2/; 1 lb., 7/ each.

(*Ophelia Chirata*)

One to seven proof spirit makes Tinct. Chirata, B.P.

Quarter-ounce in 10 oz. distilled water makes Infusum Chirata, B.P.

Cinchona Calisaya. Dose, 1 to 1 drachm. 4 oz., 2/1; 1 lb.,

7/6 each.

(*Calisaya Bark.*)

Especially rich in alkaloids.

Cinchona, Red. Dose, 1 to 1 drachm. 4 oz., 2/1; 1 lb., 7/6 each.

(*Cinchona Succirubra*)

One to four proof spirit makes Tinct. Cinchonæ, B.P.

One oz. Valoid Fluid Extract, 1/4 oz. Aromatic Sulphuric Acid

with distilled water to one pint makes Infusum Cinchonæ

Acidum, B.P.

Coca. Dose, 1 to 4 drachms. 4 oz., 2/; 1 lb., 7/ each.

(*Erythroxylon Coca.*)

One to forty-nine distilled water makes Infusum Cocæ.

One to twenty-nine of sherry or port makes Vinum Cocæ.

Collinsonia. Dose, 1 to 2 drachms. 4 oz., 3/6; 1 lb., 12/ each.

(*Collinsonia Canadensis.*)

One to nine proof spirit makes Tinct. Collinsoniæ Canadensis.

Colchicum. Dose, 2 to 5 min. 4 oz., 2/; 1 lb., 7/ each.

(*Colchicum Autumnale.*)

One to seven proof spirit makes Tinct. Colchici, B.P.

One to nine sherry makes the Vinum Seminum Colchici.

One to seven Aromatic Spirit of Ammonia makes Tinct. Colchici

Comp.

Colocynth. Dose, 5 to 10 min. 4 oz., 2/1; 1 lb., 7/6 each.

(*Citrullus Colocynthis.*)

One to nine rectified spirit makes Tinct. Colocynthisidis.

Conium. Dose, 3 to 10 min. 4 oz., 2/3; 1 lb., 8/ each.

(*Conium Maculatum.*)

One to seven proof spirit makes Tinct. Conii, B.P.

Convallaria. Dose, 10 to 20 min. 4 oz., 2/6; 1 lb., 8/6 each.

(*Convallaria Majalis.*)

One to seven proof spirit makes Tinct. Convallariæ.

Cornus Florida. Dose, 1 to 1 drachm. 4 oz., 2/7; 1 lb., 9/ each.

Coto Bark. Dose, 2 to 6 min. 4 oz., 3/6; 1 lb., 12/ each.

(*Para-coto.*)

One to nine rectified spirit makes Tinct. Coto.

Cotton Root Bark. Dose, 1 to 2 drachms. 4 oz., 2/7; 1 lb., 9/ each.

(*Gossypium Herbaceum*)

One to three proof spirit makes Tincture of Cotton Root Bark.

Cubebs. Dose, 5 to 20 min. 4 oz., 3/6; 1 lb., 12/ each.

(*Cubeba Officialis*)

One to seven rectified spirit makes Tinct. Cubebæ, B.P.

Damiana. Dose, 1 to 2 drachms. 4 oz., 2/7; 1 lb., 9/ each.

(*Turnera Microphylla.*)

Digitalis. Dose, 2 to 5 min. 4 oz., 2/6; 1 lb., 8/6 each.

(*Digitalis Purpurea*)

One to seven proof spirit makes Tinct. Digitalis, B.P.

Twenty-eight min. in 10 oz. distilled water makes Infusum Digitalis, B.P.

Ergot. Dose, 10 to 60 min. 4 oz., 3/; 1 lb., 10/ each.

(*Claviceps Purpurea, Ergot.*)

One to three proof spirit makes Tinct. Ergot, B.P.

Quarter-oz. in 10 oz. distilled water makes Infusum Ergotæ, B.P.

Eucalyptus. Dose, 15 to 60 min. 4 oz., 2/3; 1 lb., 8/ each.

(*Eucalyptus Globulus*)

One to thirty nine distilled water makes Decoctum Eucalypti.

One to four rectified spirit makes Tinct. Eucalypti.

Five to three white sugar dissolved therein makes Syrupus

Eucalypti.

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(Continued from page 36, bottom folio.)

Valoid Fluid Extracts—continued.

Euonymus. Dose, $\frac{1}{2}$ to 1 drachm. 4 oz., $\frac{2}{7}$; 1 lb., $\frac{9}{16}$ each.
(*Euonymus Atropurpureus*, Wahoo.) Made from young bark.
One to four rectified spirit makes Tinct. Euonymi.

Gelsemium. Dose, 3 to 5 min. 4 oz., $\frac{2}{7}$; 1 lb., $\frac{9}{16}$ each.
(*Gelsemium Semperivirens*.)
One to seven proof spirit makes Tinct. Gelsemium, B.P.

Gentian. Dose, $\frac{1}{2}$ to 1 drachm. 4 oz., $\frac{1}{9}$; 1 lb., $\frac{6}{16}$ each.
(*Gentiana Lutea*.)

Ginger. Dose, 5 to 40 min. 4 oz., $\frac{2}{6}$; 1 lb., $\frac{8}{16}$ each.
(*Zingiber Officinale*.)
One to seven rectified spirit makes Tinct. Zingiberis, B.P.
One to one rectified spirit makes Essentia Zingiberis, B.P.

Grindelia Robusta. Dose, $\frac{1}{2}$ to 1 drachm. 4 oz., $\frac{2}{6}$; 1 lb., $\frac{8}{16}$ each.

Guaiacum. Dose, 1 to 2 drachms. 4 oz., $\frac{2}{6}$; 1 lb., $\frac{8}{16}$ each.
(*Guaiacum Officinale*.)
One to four Spirit Ammon. Arom. makes Tinct. Guaiaci Ammon., B.P.

Guarana. Dose, 20 to 30 min. 4 oz., $\frac{5}{1}$; 1 lb., $\frac{16}{16}$ each.
(*Paullina Sorbilis*.)
One to three proof spirit makes Tinct. Guarane.

Hamamelis. Dose, 1 to 10 min. 4 oz., $\frac{2}{1}$; 1 lb., $\frac{7}{16}$ each.
(*Hamamelis Virginica*.)
One to nine proof spirit makes Tinct. Hamamelidis.
Hazeline is the best form of this drug.

Hydrastis. Dose, 10 to 30 min. 4 oz., $\frac{2}{6}$; 1 lb., $\frac{8}{16}$ each.
(*Hydrastis Canadensis*.)
One to nine proof spirit makes Tinct. Hydrastis.

Hyoscyamus. Dose, 5 to 10 min. 4 oz., $\frac{3}{6}$; 1 lb., $\frac{12}{16}$ each.
(*Hyoscyamus Niger*.)
One to seven proof spirit makes Tinct. Hyoscyami, B.P.

Ipecacuanha. Dose, 5 to 60 min. 4 oz., $\frac{3}{6}$; 1 lb., $\frac{12}{16}$ each.
(*Cephaelis Ipecacuanha*.)
One to nine proof spirit makes Tinct. Ipecacuanhæ.
Five to ninety simple syrup makes Syrup Ipecacuanhæ.

Jaborandi. Dose, $\frac{1}{2}$ to 1 drachm. 4 oz., $\frac{2}{6}$; 1 lb., $\frac{8}{16}$ each.
(*Pilocarpus Pennatifolius*.)
One to three proof spirit makes Tinct. Jaborandi, B.P.
Half-oz. in 10 oz. distilled water makes Infusum Jaborandi, B.P.

Jalap. Dose, 15 to 60 min. 4 oz., $\frac{2}{1}$; 1 lb., $\frac{7}{16}$ each.
(*Exogonium Purga, Jalap.*)
One to seven proof spirit makes Tinct. Jalapæ, B.P.

Jamaica Dogwood. Dose, $\frac{1}{2}$ to 2 drachms. 4 oz., $\frac{2}{3}$; 1 lb., $\frac{8}{16}$ each.
(*Piscidia Erythrina*.)

Juniper. Dose, $\frac{1}{2}$ to 1 drachm. 4 oz., $\frac{2}{3}$; 1 lb., $\frac{8}{16}$ each.
(*Juniperus Communis*.)

Kava Kava. Dose, 10 to 60 min. 4 oz., $\frac{3}{6}$; 1 lb., $\frac{12}{16}$ each.
(*Piper Methysticum*.)
One to seven proof spirit makes Tinct. Kava Kava.

Kola Nut. Dose, 10 to 30 min. 4 oz., $\frac{3}{1}$; 1 lb., $\frac{10}{16}$ each.
(*Cola Acuminata*.)

Koroniko. Dose, 10 to 60 min. 4 oz., $\frac{2}{6}$; 1 lb., $\frac{8}{16}$ each.
(*Veronica Salicifolia, Koroniko*.)
One to four proof spirit makes Tinct. Koroniko.

Leptandra. Dose, $\frac{1}{2}$ to 1 drachm. 4 oz., $\frac{2}{6}$; 1 lb., $\frac{8}{16}$ each.
(*Leptandra Virginica*.)
One to four Aromatic Spirit of Ammonia makes Tinct. Leptandræ Ammoniatæ.

Lobelia. Dose, 3 to 5 min. 4 oz., $\frac{2}{1}$; 1 lb., $\frac{7}{16}$ each.
(*Lobelia Inflata*.)
One to seven proof spirit makes Tinct. Lobeliæ, B.P.
One to seven Spirit of Ether makes Tinct. Lobeliæ Ether, B.P.

Lupulus. Dose, $\frac{1}{2}$ to 1 drachm. 4 oz., $\frac{2}{7}$; 1 lb., $\frac{9}{16}$ each.
(*Humulus Lupulus*.)
Half-oz. in 10 oz. distilled water makes Infusum Lupuli, B.P.
One to seven proof spirit makes Tinct. Lupuli, B.P.

Nux Vomica. Dose, 2 to 5 min. 4 oz., $\frac{2}{7}$; 1 lb., $\frac{9}{16}$ each.
(*Strychnos Nux Vomica*.)
Five to seventeen rectified spirit makes Tinct. Nucis Vomicae, B.P.
(One fluid oz. contains 1 gr. total alkaloids and keeps quite clear.)

Orange Peel (Bitter). Dose, $\frac{1}{2}$ to 2 drachms. 4 oz., $\frac{2}{4}$; 1 lb., $\frac{8}{16}$ each.
(*Citrus Vulgaris*.)
One to nine proof spirit makes Tinct. Aurantii, B.P.
One of Tinct. to seven simple syrup makes Syrup Aurantii, B.P.
One to nineteen distilled water makes Infusum Aurantii, B.P.

Pinus Canadensis. Dose, 10 to 30 min. 4 oz., $\frac{2}{3}$; 1 lb., $\frac{8}{16}$ each.
(*Hemlock Pine*.)

Podophyllum. Dose, 10 to 30 min. 4 oz., $\frac{2}{3}$; 1 lb., $\frac{8}{16}$ each.
(*Podophyllum Peltatum*.)
Two to two Aromatic Spirit of Ammonia makes Tinct. Podophylli Ammoniatæ. Does not precipitate when mixed with water.
Dose, 20 min. to one drachm.

Valoid Fluid Extracts—continued.

Pareira Root. Dose, $\frac{1}{2}$ to 2 drachms. 4 oz., $\frac{1}{9}$; 1 lb., $\frac{6}{16}$ each.
(*Chonodendron Tomentosum*.)
One and a quarter with distilled water to twenty makes Decoctum Pareiræ, B.P.

Poke Root. Dose, 2 to 10 min. 4 oz., $\frac{3}{1}$; 1 lb., $\frac{10}{16}$ each.
(*Phytolacca Decandra*.)
One to nine equal parts rectified spirit and water makes Tinct. Phytolacæ.

The Extract sprinkled on Burroughs' Paper-Fibre Lint is an excellent substitute for Glycerine and Belladonna.

Pulsatilla. Dose, 2 to 5 min. 4 oz., $\frac{2}{7}$; 1 lb., $\frac{9}{16}$ each.
(*Anemone Pulsatilla*.)
One to nine proof spirit makes Tinct. Pulsatillæ.

Rhatany. Dose, $\frac{1}{2}$ to 1 drachm. 4 oz., $\frac{2}{1}$; 1 lb., $\frac{7}{16}$ each.
(*Krameria Triandra*.)
One to seven proof spirit makes Tinct. Krameriæ, P.P.

Half-oz. in 10 oz. distilled water makes Infusum Krameriæ, B.P.

Rhubarb. Dose, 20 to 40 min. 4 oz., $\frac{2}{7}$; 1 lb., $\frac{9}{16}$ each.
(*Rheum Officinale*.)
Quarter-oz. in 10 oz. distilled water makes Infusum Rhei, B.P.

Sanguinaria. Dose, 10 to 15 min. 4 oz., $\frac{2}{4}$; 1 lb., $\frac{8}{16}$ each.
(*Sanguinaria Canadensis*.)
Two to eighteen proof spirit makes Tinct. Sanguinariæ, U.S.P.

Sarsaparilla. Dose, 1 to 2 drachms. 4 oz., $\frac{2}{3}$; 1 lb., $\frac{8}{16}$ each.
(*Smilax Officinalis*.)
One to seven distilled water makes Decoctum Sarsæ, B.P.

Sarsaparilla Comp. Dose, 1 to 5 drachms. 4 oz., $\frac{2}{3}$; 1 lb., $\frac{8}{16}$ each.
Two to ten distilled water makes Decoctum Sarsæ Comp., B.P.

Senega. Dose, 10 to 20 min. 4 oz., $\frac{2}{6}$; 1 lb., $\frac{8}{16}$ each.
(*Polygala Senega*.)
One to seven proof spirit makes Tinct. Senegæ, B.P.

Half-oz. in 10 oz. distilled water makes Infusum Senegæ, B.P.

Eight oz. Valoid Fluid Extract, 90 min. Solution of Ammonia, 30 oz. white sugar and distilled water to 50 oz. makes Syrup Senegæ, U.S.P.

Senna. Dose, 1 to 4 drachms. 4 oz., $\frac{1}{9}$; 1 lb., $\frac{6}{16}$ each.
(*Cassia Officinalis*.)
One to seven Kepler Malt Extract or simple syrup makes a palatable aperient for ladies and children.

Serpentaria. Dose, $\frac{1}{2}$ to 1 drachm. 4 oz., $\frac{2}{6}$; 1 lb., $\frac{8}{16}$ each.
(*Aristolochia Serpentina*.)
One to seven proof spirit makes Tinct. Serpentariæ, B.P.

Quarter-oz. in 10 oz. distilled water makes Infusum Serpentariæ, B.P.

Squill. Dose, 5 to 60 min. 4 oz., $\frac{2}{7}$; 1 lb., $\frac{9}{16}$ each.
(*Urginea Scilla*.)
One to seven proof spirit makes Tinct. Scillæ, B.P.

Stillingia. Dose, 1 to 2 drachms. 4 oz., $\frac{2}{6}$; 1 lb., $\frac{8}{16}$ each.
(*Stillingia Sylvatica*.)

Stillingia Comp. Dose, $\frac{1}{2}$ to 1 drachm. 4 oz., $\frac{2}{6}$; 1 lb., $\frac{8}{16}$ each.
(*Alterative Comp*.) MacDade's formula.

Stramonium Seeds. Dose, 2 to 5 min. 4 oz., $\frac{2}{6}$; 1 lb., $\frac{8}{16}$ each.
(*Datura Stramonium*.)
One to seven proof spirit makes Tinct. Stramonii, B.P.

Taraxacum. Dose, 1 to 2 drachms. 4 oz., $\frac{1}{9}$; 1 lb., $\frac{6}{16}$ each.
(*Taraxacum Dens Leonis*.)

Tritium Repens. Dose, 1 to 3 drachms. 4 oz., $\frac{2}{3}$; 1 lb., $\frac{7}{16}$ each.
One to nineteen distilled water makes Decoctum Tritici Repentis.

Uva Ursi. Dose, $\frac{1}{2}$ to 1 drachm. 4 oz., $\frac{2}{1}$; 1 lb., $\frac{7}{16}$ each.
(*Arctostaphylos Uva Ursi*.)
Half-oz. in 10 oz. distilled water makes Infusum Uvæ Ursi, B.P.

Valerian. Dose, 15 to 30 min. 4 oz., $\frac{2}{1}$; 1 lb., $\frac{7}{16}$ each.
(*Valeriana Officinalis*.)
One to seven proof spirit makes Tinct. Valerianæ, B.P.

One to seven Spirit Ammon. Arom. makes Tinct. Valerianæ Ammon., B.P.

Half-oz. in 10 oz. distilled water makes Infusum Valerianæ, B.P.

Veratrum Viride. Dose, 2 to 4 min. 4 oz., $\frac{2}{3}$; 1 lb., $\frac{8}{16}$ each.
(*Hellebore*.)
One to four rectified spirit makes Tinct. Veratri Viridis, B.P.

Wild Cherry. Dose, $\frac{1}{2}$ to 1 drachm. 4 oz., $\frac{2}{1}$; 1 lb., $\frac{7}{16}$ each.
(*Prunus Virginiana*.)
Valoid Fluid Extract 54 oz., Glycerine 2 oz., simple syrup to two pints makes Syrup Pruni Virginianæ.

Valoid Fluid Extract 8 oz., distilled water 15 oz., rectified spirit 25 oz., makes Tinct. Pruni Virginianæ.

Yerba Santa. Dose, 10 to 40 min. 4 oz., $\frac{3}{1}$; 1 lb., $\frac{10}{16}$ each.
(*Eriodictyon*.)
One to five Kepler Malt Extract makes Malt and Yerbine.

Vaporoles.—For inhalation and fumigation. Consist of glass capsule containing medicament enclosed in beautiful silken sack. Put up in boxes each containing 12 Vaporoles, 24/ per doz. boxes.

Wound Pads, Plain and Antiseptic. 35/ per gross.

BURROUGHS, WELLCOME & CO., Snow Hill Buildings, London,

Who will be happy to supply trial specimens free to Medical Men and Chemists on request.



ESTABLISHED 1859.

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The Pharmaceutical Society of New South Wales.

The Midland Pharmaceutical Association of New Zealand.

The Pharmaceutical Society of Queensland.

The Pharmaceutical Society of South Australia.

The Hobart Chemists' Association.

The Launceston Pharmaceutical Association.

South African Pharmaceutical Association.

For Australasian subscribers the subsidiary journal, THE CHEMIST AND DRUGGIST OF AUSTRALASIA, is included.

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ADVERTISEMENTS of situations vacant and wanted, businesses for disposal, &c., will be received by us up till the first post on Friday morning.

MR. HARRY V. DAKERS, our agent for the United States, has removed his office from Liberty Street to 24 Union Square, New York.

SUBSCRIBERS' ADDRESSES.—In order to ensure uninterrupted delivery of THE CHEMIST AND DRUGGIST to subscribers who may be changing their address, notice of such change should be received by the Publisher not later than Monday of the week in which the journal is to be sent to the new address.

THE VICTORIAN TARIFF.

THEY are again tinkering at the customs tariff in Victoria, and the budget brought before the Legislative Assembly of the Colony on July 30 contains a list of the proposed alterations, of which the following is a synopsis so far as the drug, chemical, and allied trades are concerned:—

Asphyxiators, for rabbit killing—Proposed to be free from January 1, 1890.

Blacking, &c.—Proposed 25 per cent. on burnishing, &c., now undefined.

Brushware—Now 25 per cent., proposed 30 per cent.

China ware and porcelain—Duty proposed, 10 per cent., in lieu of fixed rates.

Cocoa—Nibs to be free from January 1, 1890.

Drugs, acetic acid—Increased duty according to strength.

„ cocculus indicus—Duty raised to 1s. per lb., in lieu of 1s. 6d. per cwt.

„ nux vomica—Duty raised to 2s. per cwt., in lieu of 1s. 6d. per cwt.

„ —Sundry items to be free.

Earthenware—Duty to be taken by outside instead of inside measurement, and at fixed rate.

Fruits and vegetables, preserved—Increase on bottled and canned; in crease equal to about 3d. per lb.

Glassware—Alterations and increase on aerated-water bottles.

Glue, liquid, and gums and cements—Proposed 20 per cent., now in dispute.

Ink, writing—Now free; proposed 10 per cent.

Jams and jellies—Now 2d. per lb.; proposed 3d.

Meats, &c., potted—No fixed rate; proposed 20 per cent. *ad valorem*.

Milk, preserved—Now free; proposed 2d. per lb.

Oils, in bottles—Increase in rates.

„ in bulk—Kerosene to be free from January 1, 1890.

Opium—To be admitted as a drug only.

Paints, dryers, and putty—Now free; proposed 40s. per ton.

Peel, candied—Now 10 per cent. and free; proposed 2d. per lb.

Perfumery—Now 10 per cent.; proposed 20 per cent.

Pickles, in bottles, &c.—Increase in duty.

„ all other—Now 5s. per cwt.; proposed 10 per cent.

Sauces, in bottles, &c.—Now 20 per cent.; proposed fixed rates, with slight increase.

Tea—Now 3d. per lb.; proposed 1d. from August 10, 1889.

It is estimated (on the supposition that the quantity of imports will in every case remain as before) that the reduction in duties will amount to an aggregate of 98,500*l.*, and the increase to 76,300*l.*, which would make a net loss of revenue of 22,200*l.*, but this is expected to be reduced to 5,000*l.* by the proposed alteration with regard to opium, which in future will be classified only as a drug.

As regards glassware, at present bottles for aerated waters and medicine bottles are charged 6*d.* the cubic foot, and plain glass 1s. per cubic foot, and cut glass 2s. 6*d.* It was first proposed to make an *ad valorem* rate for these, but in view of the difficulties attendant upon the collection of *ad valorem* duties the fixed or measurement duties have been retained, but the outside measurement is to be taken instead of inside, as now. Generally the proposed rates will not much exceed those at present charged, but as regards bottles for aerated waters there will be an increase for protective purposes. It is also intended to reduce the tonnage dues one half from January 1 next. It is believed that the reduction will be a great advantage to the port of Melbourne, although in the first instance it is estimated there will be a loss of about 17,000*l.* for the half-year. The present dues are very high and much complained about. High charges and long delays are earning for Melbourne a bad name.

NEW OFFICE AT SYDNEY, N.S.W.—Our Australian staff have found it necessary to take an office at Sydney, N.S.W. This is situated at 13 Queen's Chambers, Barrack Street.

THE CHEMIST AND DRUGGIST OF AUSTRALASIA, published monthly at our Melbourne office, can be supplied to subscribers outside Australasia at 5s. per annum, payable in advance, and commencing at any date. Chemists interested in the drug trade and the pharmaceutical affairs of the Australasian Colonies will find a full record of all events affecting their occupation in *The Chemist and Druggist of Australasia*. Single copies can be supplied at 6*d.* each. Application should be made by English or American subscribers to the office at 42 Cannon Street, London.

CORNER FOR STUDENTS.

CONDUCTED BY RICHARD J. MOSS, F.C.S., F.I.C.

QUALITATIVE ANALYSIS.

A MIXTURE of two salts will again form the subject of the exercise in qualitative analysis. The mixture is to be submitted to a thorough systematic examination, the constituents of the mixture are to be detected, and all other substances proved absent. Students' reports should contain a concise account of the work done, and should include a list of the constituents detected, distinguishing any which may be regarded as accidental impurities.

Students' applications for portions of the mixture will be received up to the morning of next Wednesday, September 25, and the samples will be forwarded immediately.

Students' reports will be received up to Wednesday, October 9.

REPORTS.

The mixture of salts submitted for analysis last month consisted of four parts of calcium sulphate and one part of copper arsenite (Scheele's green).

The calculated composition of 100 parts of this mixture is:—

Cu	..	..	..	..	..	6.76
Ca	..	..	..	..	..	23.53
H	..	..	..	..	..	.11
AsO ₃	..	..	..	..	..	13.13
SO ₄	..	..	..	..	..	58.47
						100.00

The results of this analysis present more than the usual variety. Out of 31 students 19 failed to detect the arsenious radicle, although it was present to the extent of 13 per cent., and 8 students failed to detect 23 per cent. of calcium, while only one student failed to detect copper, although there was less than 7 per cent. in the mixture. In the case of the sulphuric radicle only one student was unsuccessful. But the most remarkable errors were not those of omission. The acetic radicle—or, rather, its supposed presence—has again been the source of trouble, no fewer than 7 students report having detected it. The other substances reported to have been detected are tin, antimony, chromium, strontium, magnesium, potassium, chlorine, fluorine, and the boracic, phosphoric, and nitric radicles. Out of the 31 reports 9 only were correct so far as the final results were concerned.

Owing to the facility with which certain compounds of arsenic can be employed as poisons, a great deal of attention has been devoted to the detection of the element by chemical methods. There is probably no substance which can be detected and identified with greater precision by analytical methods than arsenic. At the same time it must be borne in mind that an analytical error in the case of arsenic, supposed to have been used as a poison, might be very serious, so that it is impossible to introduce too much refinement and nicety into methods for its detection. In the present case the problem was a simple one. The quantity of arsenic in the mixture was comparatively large, and there was no difficulty to be overcome at all comparable to that which the presence of organic matter introduces in toxicological cases. The first precaution to be observed was to ensure that the copper and arsenic were completely precipitated by sulphuretted hydrogen. The only safe plan is

to continue treating the liquid with the gas until it smells strongly of sulphuretted hydrogen, after being well shaken and allowed to stand for a few minutes exposed to the air. When the precipitate had been collected on a filter and well washed, the next thing to be done was to treat it with potassium or sodium sulphide; ammonium sulphide could not be employed, as it would have dissolved some of the copper sulphide. The alkaline solution contained the arsenic, which was precipitated as yellow tersulphide on the addition of an excess of acid. The bright yellow colour of the precipitate thus obtained went a long way towards proving that antimony and tin were absent, but of course it was necessary to examine the precipitate for these elements in the usual way. The tests by which the presence of arsenic might be confirmed are legion; perhaps the best are those depending upon the production of metalloidal arsenic from the sulphide by fusion with a reducing agent, and the subsequent oxidation of the arsenic to arsenious anhydride—a form in which it can be recognised with great certainty, as the octahedral crystals of this oxide are highly characteristic.

PRIZES.

The First Prize for the best analysis has been awarded to
ANDREW H. CLELAND, Leytonstone, E.

The Second Prize has been awarded to
W. COWDERY, 2 Wardley Street, Wandsworth, S.W.

Marks Awarded for Analyses:

A. H. Cleland (1st prize)	..	98	E. Winzer ..	..	..	70
W. Cowdery (2nd prize)	..	96	P. Linctus ..	..	..	70
Moyhitt ..	..	94	W. G. Loughottom ..	..	..	70
G. W. West ..	..	93	S. P. S. ..	..	..	69
Juniper ..	..	92	Excursus ..	..	..	60
Quis ..	..	90	W. H. Goy ..	..	..	60
Segarmour ..	..	90	Squills ..	..	..	60
Zinziber ..	..	90	A. M. S. ..	..	..	55
Saponis ..	..	90	Fabrik ..	..	..	50
A. B. C. ..	..	80	E. P. Greenbalg ..	..	..	45
H. Bowden ..	..	80	Opoanax ..	..	..	45
G. Lee ..	..	75	C. Wild ..	..	..	40
H. Hamer ..	..	75	E. T. Wood ..	..	..	35
G. F. M. ..	..	70	J. W. Adamson ..	..	..	30
Renrut ..	..	70	Analysis ..	..	..	10
Frango ..	..	70				

TO CORRESPONDENTS.

Prizes.—The students to whom prizes are awarded are requested to write at once to the Publisher, naming the book they select, and stating how they wish it forwarded.

Any scientific book that is published at a price not greatly exceeding half-a-guinea may be taken as a first prize.

Any scientific book which is sold for about five shillings may be taken as second prize.

. All communications should include the names and addresses of the writers

JUNIPER.—Any sulphate fused with sodium carbonate on charcoal is more or less reduced to a sulphide which stains metallic silver. The reaction is a proof of the presence of sulphur in some form, but not necessarily in the free state or as a sulphide.

A. B. C.—When the mixture was heated on charcoal an unmistakable garlic odour was evolved; this indication of the presence of arsenic ought not to have been overlooked.

G. LEE.—You omitted to give a summary of your results.

G. F. M. The very slight solubility of the mixture in water was inconsistent with the supposition that a nitrate was present in any considerable quantity.

RENRUT.—Ferric chloride oxidises arsenites to arsenates, and compounds of the latter class closely resemble phosphates in many of their reactions.

E. WINZER.—You observe that the black precipitate produced by sulphuretted hydrogen was insoluble in sodium hydrate, but you do not give any proof that no part of it was soluble in that reagent.

P. LINCTUS.—Your evidence of the presence of a fluoride is far from conclusive; the fumes that you observed were simply sulphuric acid fumes. You did not observe the corrosive action on glass, so characteristic of hydrofluoric acid.

S. P. S.—The only evidence you adduce of the presence of an acetate is

the odour produced on heating the mixture with sulphuric acid. The irritation caused by sulphuric acid fumes is frequently mistaken for the odour of acetic acid; a more reliable test is necessary.

EXCURSUS.—Your brief notes can scarcely be called a report of the analysis. You must remember that you have not only to prove certain substances to be present—you must prove that all others are absent. You seem to have overlooked arsenic, antimony, and tin altogether.

W. H. GOR.—The black precipitate which sulphuretted hydrogen gave in the acid solution might have contained many sulphides in addition to those of copper and mercury, the only two metals for which you examined this precipitate. As a matter of fact it contained arsenic tersulphide, which might have been separated from the copper sulphide by treating the precipitate with an alkali or an alkaline sulphide, which would have dissolved the arsenic compound. We have no fault to find with your mode of drawing up your report.

SQUILLS.—The failure to detect such a large quantity of the sulphuric radicle was a serious error. The method which you describe ought to have given a correct result. You should repeat the experiment with some calcium sulphate. You did not give enough information about your mode of applying Marsh's test, so it is difficult to say why you found it hard to obtain the spots. You must remember that the gas ought to be thoroughly dried by passing it through a tube containing calcium chloride before it is ignited, and the porcelain should be cold; if it gets too hot the arsenic will not condense upon it. The solution from which the arseniuretted hydrogen is evolved should not contain any oxidising agent, such as nitric acid, in notable quantity.

A. M. S.—Owing to the slight solubility of calcium sulphate it is easy to confound calcium with strontium. The sulphuric acid employed as a distinguishing test should be made of such a strength that it will not precipitate a calcium solution. It is safer to employ a solution of calcium sulphate.

FABRIK.—If the mirror you obtained was thick it would not dissolve at once in the sodium hypochlorite. If it was due to antimony it would not dissolve at all. It is probable that you did not add enough hydrochloric acid to the ammonium carbonate solution, which must have dissolved some of the arsenic tersulphide.

E. P. GREENHAUGH.—The precipitate which you obtained with sodium phosphate must have been due to calcium, and the probability is that the solution to which you added ammonium carbonate was not really alkaline.

ORONOX.—Your report does not give enough information about your work. You refer to a solution without stating how it was prepared.

C. WILD.—It is most unsafe to draw any conclusion about acetic acid from small alone. No operation that you performed could have led to the detection of arsenic.

E. T. WOOD.—The arsenic was either not precipitated by sulphuretted hydrogen in the first case, or else it was not thrown down from the soda solution by hydrochloric acid in the second case. The former error would arise from your having employed an insufficiency of the gas, and the latter error from your having failed to add hydrochloric acid, until the solution was distinctly acid, after being well mixed.

ANALYSIS.—To suppose that the change of colour observed when the mixture was heated indicated tin was rather a stretch of the imagination. The borax bead was blue when cold, not green. There was no use attempting to apply the cobalt chloride test to the coloured mass obtained in this case on heating the mixture. Your account of the work done with the sulphuretted hydrogen precipitate is too meagre to admit of any useful criticism. It would be difficult to name any two salts which would produce a mixture having the composition you ascribe to this.

WINE OF COCA, BEEF, AND IRON.—

Extract of beef	256 grains
Ammonio-citrate of iron	64 "
Cocaine muriate	8 "
Citric acid	30 "
Sugar	2 oz.
Alcohol	2 "
Spirit of orange (1 in 8)	30 minims
Ferric hydrate	q. s.
Sherry wine	q. s.
Water	q. s.

To make 16 oz.

Dissolve the extract of beef in 1 oz. of hot water, add the alcohol containing the spirit of orange and then ferric hydrate. Mix thoroughly, and then add 10 fl. oz. of sherry wine. After standing several days, with frequent agitation, filter and pass enough water through the paper to make 13 fl. oz. of filtrate. In a small portion of the filtrate dissolve the cocaine muriate and citric acid and return it to the whole portion. Dissolve the iron in like manner, and, lastly, to the whole add the sugar and dissolve by agitation without heat. Lastly, add water to make 16 oz. and filter.—*New Idea.*

ODORIFEROUS GRASSES OF INDIA AND CEYLON.

AT a recent meeting of the Natural History Society of Bombay Mrs. J. C. Lisboa read a paper on this subject. Mrs. Lisboa gave interesting notes on the six known species of *Andropogon* which grow in India and Ceylon, and the most important of which, from a commercial point of view, are *A. nardus*, Linn. (the source of citronella oil), *A. citratus*, which yields lemon-grass oil, and *A. Schœnanthus*, Linn. [*A. Martini*, Roxb.; *A. Pachnodes*, Trin.; *A. Nardoides*, Nees; *A. Calamus Aromaticum*], which is named "ginger grass" by Europeans. The last is of all the *Andropogons* the best known, and is used for adulterating otto of rose in European Turkey. It is a curious fact that its Hindustani name is closely similar in sound to the word "rose." Thus, under the designation *Rusa*, *Rowsah*, *Rosa*, *Rose*, or *Roshé*, it is exported in large quantities from Bombay to the ports of Arabia, probably chiefly to Jeddah, whence it is carried to Turkey by the Mahommedan pilgrims. In Arabia and Turkey it appears under the name of *Idris Yaghi*, while in the otto-producing districts of the Balkan it is known, at least to Europeans, as "Geranium oil," or "Palmarosa oil." [This is not quite correct. Palmarosa oil is distilled from a species of geranium.—ED. C. & D.] Before being mixed with otto the oil is shaken with water acidulated with lemon-juice, and then exposed to the sun and air. By this process the oil loses its penetrating after-smell, and acquires a pale straw colour. The optical and chemical differences between grass oil thus refined and otto of rose are slight, so that when mixed with otto the ginger-grass oil is not easily detected. Mrs. Lisboa proceeded to describe a new species of *Andropogon*, which, as far as her knowledge and reading go, has not been described before. She has named it *A. odoratus*. It is known to the natives as *Gawat wedi*. Mrs. Lisboa came across it whilst arranging plants and dissecting spikelets of grasses for Dr. Lisboa.

Description.—Culm erect, 3–5 feet high, sometimes branching from the lower part, glabrous; nodes long bearded. Leaves lanceolate, cordate at the base, acute or acuminate, with a few long hairs; the lower cauline and radicle leaves long, the upper small, but their sheaths very long. Ligula small. Spikes numerous, erect, branched, pedicellate (the pedicel of the lower spikes longer), and congested at the end of a long peduncle without a sheathing bract, and forming an erect, dense, ovoid panicle. The rachis, pedicel, and the spikes covered with long silky hairs. Spikelets nearly two lines long, of a purple colour, the sessile and the pedicellate nearly similar; outer glume of the sessile spikelet rather thin, many-nerved, somewhat obtuse, and covered with long silky hairs, with a pit in some spikelets of the same plant, and absent in others; second glume as long as the first or a little longer, but broader, thin, and keeled; third glume thinner and hyaline; fourth glume smaller, or an awn $\frac{1}{2}$ to 1 inch long, with an hermaphrodite flower at the end of the pedicel. Pedicel of the pedicellate spikelet covered with white hairs, but the spikelet almost free of hairs. Outer glume stiff, with five or more nerves, not prominent, almost obtuse; second glume thinner, with three nerves, somewhat broader, but as long as the first; third glume hyaline, smaller; fourth glume very small, hyaline or none; no awn; at the top of the pedicel three stamens not well formed, and not as large as in the hermaphrodite flower.

This grass is common at Lanowli on the right side of the station in the fields beyond the woods, where it grows along with *Pollinia tristachya*, Thw., *Ischemum laxum*, R. Brown, *Arundinacea nepalensis*, Trin., and other annual grasses. The purple-coloured spikes of *A. odoratus* and *Pollinia tristachya* congested at the end of long peduncles form a most elegant and beautiful feature of the scenery of the field towards the end of the rainy season. It is said to be not uncommon at Khardi, Tanna, and the specimen under notice was found in the collection received from this district.

From the description this *Andropogon* would appear to belong to the section *Gymnopogon*, and is different from all other aromatic *Andropogons*. The leaves and the inflorescence also, when pressed between the fingers, emit an odour altogether different. A small quantity of volatile oil was submitted. It was distilled by Mr. Prebble, of Messrs. Kemp & Co., and was found to be of a beautiful golden-yellow colour. The odour of the oil of the new species is soft, sweet, and more agreeable than that of *A. Martini*; and if it be manufactured on a large scale with great care it may prove superior even to that of *A. nardus* and *A. citratus*.

Educational Information.

INTRODUCTORY.

FOLLOWING the custom which THE CHEMIST AND DRUGGIST has carried out for many years, a large portion of the present issue consists of carefully-collated particulars regarding the collegiate and university courses of instruction intended to prepare the student for a professional career. These particulars are purposely confined to those branches which are related to chemical science and medicine, the object being to show chemists and druggists how they should proceed in introducing their sons or apprentices to either of the professions. Pharmacy necessarily occupies the first place; then we take medicine, chemical science and practice, the dental profession, and veterinary surgery. For either of these latter it cannot be said that a period of apprenticeship in a pharmacy is time wasted; it is, in fact, in the highest degree beneficial, as it gives the student a substantial foundation for subsequent work, and takes him on to a period of his life when the mind has become set, and when there is some prospect of personal ambition inciting him to honest work.

For pharmacy and the other professions which we have named the first essential is a solid classical and commercial education. The youth who starts on such a life with the three R's only is handicapped from the first, and if he is ever to take a prominent position as a citizen or professional man he must himself make up the deficiency which his school-days have left him; it must be made up by personal effort at an age when a good result is hardest to gain. There is no longer in this country any valid excuse for this sort of thing. State-subsidised schools provide at a low cost sound education, which carries ordinarily intelligent children by the age of thirteen or fourteen far on the way to the universities. If they have passed the annual examinations at the proper time they should have acquired by that age a knowledge of the English language and history, of arithmetic and mathematics, and, in most cases, of French and Latin, as well as such subjects as geography, which enables them, with little more tuition, to pass a university matriculation examination. Indeed, the Irish and Scotch Education Boards grant leaving certificates to boys who have passed the higher standards in State-examined schools, which are accepted by several examining bodies in lieu of their corresponding preliminary examinations. Secondary education, so far as England is concerned, was for a long time under a cloud. Good education was only obtainable at high rates, and even in first-class schools there was a risk of the brighter boys getting all the attention, in order to keep up the reputation of the schools. This objectionable practice has not become extinct, but parents have come to see that mere attendance at a good school is not education, hence there is now a healthy tendency to show general progress or excellence throughout the whole school. The College of Preceptors has done a great deal to foster this spirit, and their examinations afford a good criterion of the efficiency of education in schools and the qualifications of the youth who desires to enter a profession. The scholastic work of such a youth cannot be said to be complete until he is able to pass the pupils' examination of the College of Preceptors, which comprises English grammar and history, or geography, arithmetic, algebra (including quadratic equations), Euclid (books 1-4), Latin, French, German, Italian, Spanish, or Greek (one or two only) as obligatory subjects; while as optional subjects, to add to the pass number of marks, the pupil may take any of the subjects already mentioned which are not taken as obligatory, or any of the following:—Scripture history, plane trigonometry, mechanics, mensuration, book-keeping. Physics and chemistry:—(a) sound, light, and heat; (b) electricity and magnetism; (c) chemistry. Natural history:—(a) Physiology; (b) zoology; (c) botany; (d) geology.

Political economy, music (theoretical), drawing. There are also examinations for second and third-class certificates, which, like the others, are held in June and December at the principal towns throughout England, there being local secretaries who conduct them. A list of these centres may be obtained from the Secretary to the college, Bloomsbury Square, London, W.C.; while the papers set at previous examinations may be obtained from Mr. F. Hodgson, 89 Farringdon Street, E.C. (price 6d., by post 7d.). The college also conducts a professional examination, to which full reference is made on page 415.

PHARMACEUTICAL.

HOW TO BECOME A PHARMACIST.

Pharmacy in the United Kingdom is not a "close" concern by any means. The State does not protect it, although by Act of Parliament it prevents any one in Great Britain assuming the title "Chemist and Druggist," or its equivalent, or selling poisons, who has not shown that he holds certain qualifications. In Ireland the title "Pharmaceutical Chemist" is reserved for the use of certificated persons, to whom also the right of dispensing medical prescriptions is granted by law. In both countries, however, there is no restriction on the sale of drugs or chemicals which are not legally regarded as "poisons," so that it is possible to carry on the business of pharmacy, within certain limits, independent of the law, and some really do so. But pharmacy, after all, is something else than a "business," and, although the professional element in it does not entitle the pharmacist to a professional status, it gives him the premier position amongst tradesmen, and a certain love for his work and interest in natural phenomena which are foreign to other callings. It has the advantage over professions in that it enables capital to be profitably employed, while those parts of the business which require professional skill and knowledge secure for the pharmacist remuneration on a higher scale of profit than a tradesman is entitled to. In spite of these advantages pharmacy as a calling is somewhat precarious, because of the smallness of the returns which the majority of businesses show, and the miserable nature of the profits on the purely retail business, consequent on the enterprise of gigantic stores which work on "the small profits and quick returns" system. Independent of that, the fact remains that for a comparatively small outlay pharmacy provides a comfortable living, and when the pharmacist has the advantage of more capital than usually falls to the lot of "the poor chemist," and combines with it sound knowledge of his business and a moderate amount of push, it is possible for him to make it a very satisfactory business. The examination requirements which entitle persons to practise pharmacy are different in Ireland from what they are in Great Britain, and it will be convenient to take the latter first.

GREAT BRITAIN.

A period of pupilage or apprenticeship is still the introduction of the youth to the "art and mystery" of pharmacy. This period extends from three to five years, and in England is generally served under indentures, to which the payment of a premium is attached. The amount of premium ranges from 25% to 100% for the whole period of apprenticeship, and in the case of the higher premium the apprentice, as a rule, lives with his master. In Scotland the indenture system is rare; apprentices live with their parents, or guardians, and receive from their employers a small salary in return for their services. This salary varies from 10% in

the first to 30% in the fourth year of the apprenticeship. There are certain forms to be observed in entering upon a properly-constituted apprenticeship; and as these are of great importance to the youth on the threshold of his career we have devoted a separate article to the subject. If the apprentice has not on leaving school received such a certificate as will entitle him to registration as an apprentice or student of pharmacy we strongly advise him to pass the

PRELIMINARY EXAMINATION

before he actually begins his duties in the shop. This examination is a written one, and is held at the following centres on the second Tuesday of the months of January, April, July, and October of each year.

List of Centres and Names of Superintendents of the Preliminary Examination.

Aberdeen —Alexander Strachan	Jersey —John Ereant
Birmingham —Alfred Southall	Lancaster —James Vince
Brighton —James Ross Gwatkin	Leeds —Richard Reynolds
Bristol —John Stroud	Lincoln —Joseph Maltby
Cambridge —Arthur Deck	Liverpool —Richard Parkinson
Canterbury —Edwin Bing	London —George Spratt Taylor
Cardiff —John Munday	Manchester —F. Baden Bengier
Carlisle —Andrew Thompson	Newcastle-on-Tyne —N. H. Martin
Carmarthen —Walter Lloyd	Northampton —John Bingley
Carnarvon —John Jones	Norwich —Francis Sutton
Cheltenham —William Barron	Nottingham —William H. Parker
Darlington —James Robinson	Oxford —George Thomas Prior
Douglas (Isle of Man) —Arthur William Brearey	Peterborough —Marshall Heanley
Dundee —James Hardie	Sheffield —William Ward
Edinburgh —John B. Stephenson	Shrewsbury —William Gowen Cross
Exeter —William Willey Broom	Southampton —Oliver R. Dawson
Glasgow —Alexander Kinninmont	Truro —Thomas Bickle Percy
Guernsey —John Bate Nickolls	Worcester —Charles Virgo
Hull —Charles Bains Bell	York —Joseph Sowray
Inverness —Alexander Allan	

The subjects of the examination are :—

LATIN.—Grammar : Translation of simple sentences from English into Latin; translation into English of a paragraph from Caesar, "De Bello Gallico," Book I., or Virgil, "Æneid," Book I.

[In each examination paper a passage from both of the authors is given, but a candidate is required to translate one only of such passages.]

ARITHMETIC.—The first four rules—simple and compound; vulgar fractions and decimals; simple and compound proportion; a thorough knowledge of the British metrical systems of weights and measures.

ENGLISH.—Grammar and composition.

We may briefly describe the course which the candidate should pursue in regard to the examination. The application is the first and not the least important matter. Three weeks or so before the examination is to be held he should write to the Registrar, Mr. R. Bremridge, 17 Bloomsbury Square, London, W.C., for a form of application.

This on receipt he should fill up and return with the fee of 2l. 2s., not later than fourteen days before the date on which the examination is to be held. This the Registrar acknowledges, and about a week later the local superintendent informs the candidate where the examination is to be held.

The candidate may elect to be examined at any centre he chooses, but it is always preferable to select the nearest centre. Still it is not an uncommon thing for youths who do not wish the fact to be known that they have entered for the examination to choose a centre distant from the locality in which they reside. The examination begins at 11 A.M. on the date fixed. It is advisable to be at the hall at least a quarter of an hour earlier, as no one is admitted into the room after 11 A.M., and it is advantageous to feel acquainted with the surroundings before the superintendent opens the envelope containing the questions which are set by the College of Preceptors. These questions are duly distributed, those in Latin at 11 A.M. and in arithmetic at 12.30 P.M.; then at 2 P.M. candidates are allowed an hour for luncheon, and on returning at 3 P.M. get the questions in English, which also occupy an hour and a half. The papers are collected at the end of each subject's time, and at the close of the day are sealed up in the candidate's presence, and by the same evening's post are forwarded to the Registrar, who hands them over to the College of Preceptors, by whom they are examined and reported upon to the Boards of Examiners.

The examination is a very fair one, and is excellently conducted. The questions given at the examinations this year are printed in THE CHEMIST AND DRUGGIST of the following dates:—January 12, April 13, and July 13. Our publisher will supply either of these remaining in stock at 4d. per copy.

In lieu of this examination the Boards of Examiners are empowered to accept the certificates of any of the following examinations, *provided the certificates are for the complete examination, and include Latin, arithmetic, and English.* The fee in this case is also 2l. 2s.

University of Oxford.—Junior or Senior Local Examinations, Responsions, Moderations, Examination for a Degree in Arts.

University of Cambridge.—Junior or Senior Local Examinations, Higher Local Examinations, Previous Examination, Examination for a Degree in Arts.

University of Durham.—Junior or Senior Local Examinations, Registration Examination for Medical Students, Examination for Students at the end of their first year, Examination for a Degree in Arts or Science.

University of London.—Matriculation Examination, Preliminary Scientific (M.B.) Examination, Examination for a Degree in Arts or Science.

Victoria University.—Entrance Examination in Arts of the Faculty of Medicine, Preliminary Examination.

University of Edinburgh.—Junior or Senior Local Examinations, Preliminary Examination for Graduation in Science or Medicine and Surgery, Examination for a Degree in Arts or Science.

University of Aberdeen.—Junior or Senior Local Examinations, Preliminary Examination for Graduation in Medicine or Surgery, Examination for a Degree in Arts.

University of Glasgow.—Junior or Senior Local Examinations, Preliminary Examination for Graduation in Medicine or Surgery, Examination for a Degree in Arts.

University of St. Andrew's.—Junior or Senior Local Examinations, Preliminary Examination for Graduation in Medicine or Surgery, Examination for a Degree in Arts.

University of Dublin.—Public Entrance Examinations, Examination for a Degree in Arts.

Royal University of Ireland.—Matriculation, First University Examination, Second University Examination, Examination for a Degree in Arts.

Queen's University in Ireland.—Local Examinations for men and women, Entrance or Matriculation Examination, previous Examination for B.A. Degree, Examination for a Degree in Arts.

Oxford and Cambridge Schools' Examination Board.—Certificate.

Royal College of Surgeons of England.—Preliminary Examination for the Membership or for the Fellowship.

Apothecaries' Society of London.—Examination in Arts.

Royal Colleges of Physicians and Surgeons of Edinburgh.—Preliminary Examination in General Education.

Faculty of Physicians and Surgeons of Glasgow.—Preliminary Examination in General Education.

Royal College of Surgeons in Ireland.—Preliminary Examination.

Apothecaries' Hall of Ireland.—Preliminary Examination in General Education.

Intermediate Education Board for Ireland.—Certificates.

Owens College.—Junior Students' General Examination.

College of Preceptors.—Examination for a First or Second Class Certificate.

Incorporated Law Society.—Preliminary Examination in General Knowledge.

Scotch Education Department.—The Honours and First Grade Leaving Certificates, provided the certificates in English, Latin, and arithmetic are all obtained at any one annual examination.

BETWEEN PRELIMINARY AND MINOR.

If an apprentice has not passed the Preliminary examination or its equivalent before entering on shop work he should not begin his technical studies until he has this test of elementary training off his mind. From three to six months with a local tutor one hour per day should suffice for the requisite preparation.

The proper conception of apprenticeship is that it is a period during which the pupil is initiated into the art and

mystery of the calling. There is another side to the picture: it shows that the pupil is to give diligent service to his master. Observation inclines us to the supposition that the latter is the more prominent part of an apprenticeship. "Diligent service" frequently means that the apprentice takes down the shutters, sweeps the shop, washes bottles, dusts the shop rounds, runs errands, and does the hundred-and-one odd things which have little science and no "art and mystery" in them. Such is the condition of things in small establishments. In large pharmacies the porter or messenger-boy relieves the apprentices of much of the nastier work, but everyone has to take his turn in keeping things tidy and in order. On the whole, training in a small pharmacy under a competent chemist and druggist is perhaps the best, for the apprentice gets his hand in at everything. Moreover, the master, if he is at all a conscientious man, directs the apprentice's studies as far as they can go during the first three or four years in the trade. The apprentice should at the outset acquaint himself with the nature and properties of the things which he handles. The British Pharmacopœia is his guide here, but it is perhaps better to take a commentary on the Pharmacopœia, such as Squire's "Companion" or Royle's "Materia Medica," which give all that the Pharmacopœia does, and something more, viz. the uses of the medicines. It is important that the apprentice should early acquaint himself with that part of the subject. He should learn, if possible, even though it be "by rote," the botanical names of plants which yield drugs, their natural order, where they come from, and so on. With chemicals he can do little as yet, except to learn their properties, whether soluble in water or not, poisonous or not, and their uses in medicine. But it is possible to learn a great deal at this period regarding galenical preparations, such as ointments, compound powders, liniments, and tinctures. Many of these he may be called upon to make, and so will have a good opportunity of learning their composition, while most of them he will handle daily, so that there is an incitement to know their composition. An hour's reading of the Pharmacopœia commentary daily is best for this, and at any slack period of the day the master should take him over what he has read, asking questions, throwing in hints, telling facts, and so on. There is little trouble in doing this, and it is wonderful how fast anything an intelligent apprentice acquires in his first few years at pharmacy sticks to him through after-life. We by no means urge exclusive attention to pharmaceutical hooks and subjects. The student has his duties as a citizen to respect; he must not forget his physical health and mental culture. He cannot be a proficient business man if he does not acquaint himself with the literature of the day, and form those friendships and associations which are the salt of life and are essential to liberal thought, intellectual activity, and sound moral development. Do all that is necessary towards this end, but keep at least one hour per day sacred to pharmaceutical study.

BOOKS TO READ.

Armstrong's "Organic Chemistry" (3s. 6d.).
 "Art of Dispensing" (Office of THE CHEMIST AND DRUGGIST, 3s. 6d.).
 Attfeld's "Chemistry" (Gurney & Jackson, 15s.).
 Balfour's "Elementary Botany" (A. & G. Black, 3s. 6d.).
 Bentley's "Organic Materia Medica" (Longmans, 7s. 6d.).
 Bentley's "Structural and Morphological Botany" (Churchill, 7s. 6d.).
 Bentley's "Student's Guide to Systematic Botany" (Churchill, 7s. 6d.).
 British Pharmacopœia (Spottiswoode & Co., 6s.).
 Cooke's "Botany" (Ward, Locke & Co., 1s.).
 Everett's "Physics" (Blackie, 3s. 6d.).
 Fitchiger and Haubury's "Pharmacographia" (Macmillan, 21s.).
 Fownes's "Chemistry" (Churchill, 10s. and 10s. 6d.).
 Ganot's "Physics" (Longmans, 15s.).
 Ganot's "Popular Natural Philosophy" (Longmans, 7s. 6d.).
 Gerrard's "Materia Medica and Pharmacy" (Lewis, 8s. 6d.).
 Henfrey's "Elementary Course of Botany," 15s.
 Holmes's "Botanical Note Book" (Christy, 3s.).
 Ince's "Latin Grammar of Pharmacy" (Baillière, 4s.).
 Muter's "Key to Organic Materia Medica" (Simpkin, Marshall, 12s. 6d.).
 Muter's "Short Manual of Chemistry" (Simpkin, Marshall, 6s. 6d.).
 Pereira's "Selecta & Prescriptis" (Churchill 5s.).
 Prantl & Vines's "Text Book of Botany" (Sonnenschein & Co., 9s.).
 Proctor's "Lectures on Practical Pharmacy" (Churchill, 14s.).
 Remington's "Practice of Pharmacy" (Burroughs, Wellcome & Co., 21s.).

Remsen's "Organic Chemistry" (Macmillan, 6s.).
 Roscoe's "Lessons in Elementary Chemistry" (Macmillan, 4s. 6d.).
 Slatter's "Qualitative Analysis" (Murby, 2s. 6d.).
 Southall's "Organic Materia Medica" (Churchill, 5s.).
 Stillé and Maisch's "National Dispensary" (Churchill, 31s. 6d.).
 Thorpe's "Inorganic Chemistry" (Collins, 2 vols. 6s.).
 Tilden's "Chemical Philosophy" (3s. 6d.).
 Wills's "Chemistry," "Elements of Pharmacy," "Hand-book to Practical Analysis," **Materia Medica** (10s. 6d.), and "Præscripta" (Westminster College of Pharmacy).
 Woodland's "Analytical Tables," "Laboratory Work," and "Botanical Charts."
 Wootton's "Problems in Chemical Physics" (3s. 6d.).

The works which are distinguished by black type are books which we can recommend to Minor students. We strongly advise the student to make himself acquainted with the provisions of the Pharmacy Act, and such other Acts as affect his calling. THE CHEMISTS' AND DRUGGISTS' DIARY for 1888 is a useful guide to these, and for full information regarding the tax on patent and proprietary medicines read Alpe's "Handy Book of Medicine-stamp Duty" (2s. 6d.). We cannot too strongly urge upon the student the necessity of taking full advantage of local facilities for instruction in science; there are few towns of importance which do not have evening classes conducted in accordance with the regulations of the Science and Art Department. Attend these if there is nothing better. Study botany practically with the microscope and in the fields. Do as much dispensing as possible, and if the pharmacy which the student is in is not favoured with much work of that character, he should practise with the prescriptions which are given in "The Art of Dispensing," and those which appear from time to time in the dispensing column in this journal. As he approaches his twenty-first year he has doubtless become an assistant, and if he has made the most of his time, he simply requires to be polished for the

MINOR EXAMINATION.

Candidates for this examination must have passed the Preliminary examination, and be 21 years of age. They have to make a declaration in the following form (to be obtained from the Registrar) and submit it with the fee of 3l. 3s., and a registrar's certificate of birth, on or before the first day of the month in which the examination is held:—

DECLARATIONS TO BE SIGNED BY AND ON BEHALF OF A CANDIDATE PREVIOUS TO HIS PRESENTING HIMSELF FOR THE MINOR EXAMINATION.

To the Registrar of the Pharmaceutical Society of Great Britain.

I hereby declare that for three years I have been practically engaged in the translation and Dispensing of Prescriptions.

[Here state with whom, and where you have resided during the three years referred to.]

Signature of candidate in full _____
 Present address _____
 Date of passing the Preliminary examination _____
 Age last birthday _____ (Accompanied by a registrar's certificate of birth).
 Date _____ 188

To the Registrar of the Pharmaceutical Society of Great Britain.

I hereby declare that to my knowledge the statement set forth in the above declaration is true.

Witness my hand this _____ day of _____ 188

 Pharmaceutical Chemist
 Chemist and Druggist.
 Medical Practitioner.

To be signed in full by either (or all) of the parties named.

The following are the subjects of the Minor examination:—

PRESCRIPTIONS.—The candidate is required to read without abbreviation autograph prescriptions, translate them into English, and render a literal as well as an appropriate translation of the directions for use. To detect errors, discover unusual doses, and have a general knowledge of

Poology; also to render in good Latin ordinary prescriptions written in English.

PRACTICAL DISPENSING.—To weigh, measure, and compound medicines; write the directions in concise language in a neat and distinct hand; to finish and properly direct each package. [*In awarding marks in this subject the time taken by the candidate in doing the work is taken into account.*]

PHARMACY.—To recognise the preparations of the Pharmacopœia which are not of definite chemical nature, and have well-marked physical characters, such as extracts, tinctures, powders, &c.; to give the proportions of the active ingredients and possess a *practical* knowledge of the processes, and the principles of the processes, by which they are made, and of the best excipients and methods of manipulation for forming emulsions, pills, &c.

MATERIA MEDICA.—To recognise specimens of roots, barks, leaves, fruits, resins, gums, animal substances, &c., used in medicine; give the botanical and zoological names of the plants, &c., yielding them, and the natural families to which they belong; name the countries and sources from which they are obtained, the official preparations into which they enter, and judge the quality and freedom from adulteration or otherwise of the specimens.

BOTANY.—To recognise the more important indigenous plants used in medicine. To possess a general knowledge of the elementary structure of plants, and the structure and distinctive characters of roots, stems, leaves, and their parts. To name and describe the various parts of the flower.

CHEMISTRY.—To recognise the ordinary chemicals used in medicine. To possess a *practical* knowledge of the processes by which they are produced, the composition of such as are compound, and explain the decompositions that occur in their production and admixture, by equations or diagrams. To determine practically, by means of tests, the presence in solution of the chemicals in common use, and explain the reactions which occur in each case. To possess a general knowledge of the laws of chemical philosophy, and a *practical* knowledge of the means of determining specific gravities, densities, and temperature, and of the instruments appertaining thereto, and the physical and chemical constitution of the atmosphere.

The examination is oral, and lasts about three hours, but the candidate may be in the rooms from 10.30 A.M. to 4 P.M., as he has frequent rests. There are two

BOARDS OF EXAMINERS,

one for England and Wales, meeting at 17 Bloomsbury Square, London, W.C., in February, April, June, July, October, and December. The other is for Scotland, and meets at 36 York Place, Edinburgh, in January, April, July, and October. The date is generally somewhere about the third week of the month, but is fixed at the time according to circumstances. Candidates may elect to be examined in London or in Edinburgh. The following are the names of the pharmaceutical chemists who at present constitute the Boards of Examiners, and the subjects in which they generally examine:—

London Board.

Blunt, T. P. (Shrewsbury).—Chemistry.	Ransom, F. (Hitchin).—Materia medica.
Bowen, J. W. (London).—Botany.	Saul, J. E. (London).—Prescription-reading.
Corder, O. (Norwich).—Botany.	Symons, W. H. (London).—Chemistry.
Druce, G. C. (Oxford).—Materia medica.	Tanner, A. E. (Tottenham).—Pharmacy.
Fletcher, J. (Cheltenham).—Practical dispensing.	Taylor, G. S. (London).—Prescription-reading.
Gale, S. (London).—Chemistry.	Thresh, J. C. (Buxton).—Chemistry.
Gerrard, A. W. (London).—Pharmacy.	
Greenish, T. E. (London).—Practical dispensing.	

Edinburgh Board.

Clark, W. I. (Edinburgh).—Botany.	Kinninmont, A. (Glasgow).—Prescription-reading.
Dott, D. B. (Edinburgh).—Chemistry.	Mahen, T. (Hawick).—Pharmacy.
Gibson, A. (Edinburgh).—Materia medica.	Nesbit, J. (Portofello).—Practical dispensing.
Gilmour, W. (Edinburgh).—Chemistry.	Stephenson, J. B. (Edinburgh).—Chairman.

The President of the Pharmaceutical Society (Mr. Carteighe) and the Vice-President (Mr. Bottle) are *ex-officio* members of both boards, and always attend the meetings in London, the President examining in chemistry, and the Vice-President

taking the chair. One or other attends the meetings in Edinburgh occasionally. We may say that the examinations of both the boards are as far as possible uniform. They are conducted in a very pleasant manner, and if the candidate knows his work, and does not become nervous, he will come away from the rooms with the conviction that he has been treated fairly. Dispensing is the most critical subject, as it is the longest, at least one hour being devoted to it; then comes chemistry (30 minutes), and at each of the other subjects the candidate is supposed to be engaged for 20 minutes; but he may be longer or shorter (if a very bad or exceptionally good man). A representative of the Privy Council is present—Dr. Thomas Stevenson in London, and Sir Douglas Maelagan in Edinburgh—not exactly to see fair play, but their reports of the manner in which the examination is conducted has much influence on the examiners. For example, Dr. Stevenson has lately complained about candidates being “ploughed” in their first subject by one examiner, and we have good reason to believe that in future candidates will be examined in at least two subjects before the chairman rejects them, if that is necessary. If the candidate is successful he is notified of the fact before he leaves the room; later he receives a certificate, and is registered as a chemist and druggist. So far he has done all that the law requires of him, and he may conduct a pharmacy in all its branches. But he may go further if he likes, for there is a

MAJOR EXAMINATION,

which is purely optional, and entitles the candidate to be registered as a “Pharmaceutical Chemist.” Strange to say, it is only persons who pass this examination who can call themselves “pharmacist,” although there is no doubt that a Minor man is as much a pharmacist as a Major man, for the Major examination is purely scientific. The 1852 Pharmacy Act protected only the titles “Pharmaceutical Chemist” and “Pharmaceutist,” and it was not until 1868 that chemists and druggists could not call themselves “Pharmacists.” From the 1st clause of the Act of that year we might suppose that the old condition of things was to continue, but the 15th clause distinctly puts it that “any person who shall take, use, or exhibit the name or title Pharmacist, not being a Pharmaceutical Chemist, shall be liable to pay a penalty or sum of five pounds.” It is time enough to aspire to this title three months after the Minor, as that interval at least must elapse between the two. The fee is 5*l.* 5*s.*

The subjects of the examination are:—

MATERIA MEDICA.—This comprises a *practical* knowledge of the methods of estimating the value of important drugs; of obtaining their active proximate constituents in a separate state; of identifying them and ascertaining their purity or impurity by tests.

BOTANY.—This comprises an intimate acquaintance with the parts of the flower, fruit, and seed; the functions and mode of arrangement of the different organs of plants; a knowledge of the general principles of classification, and of the Linnean and De Candolle's systems. The candidate must be able to distinguish practically between each of the following natural orders:—Ranunculaceæ, Papaveraceæ, Cruciferae, Malvaceæ, Leguminosæ, Rosaceæ, Cucurbitaceæ, Umbelliferae, Compositæ, Gentianaceæ, Convolvulaceæ, Solanaceæ, Atropaceæ, Labiatae, Scrophulariaceæ, Polygonaceæ, Euphorbiaceæ, Orchidaceæ, Iridaceæ, Liliaceæ, Melanthaceæ, Graminaceæ; and refer to their respective orders such specimens as may be shown to him.

CHEMISTRY.—This comprehends an intimate knowledge of the laws of chemical philosophy, a *practical* knowledge of the nature and properties of the elements and their compounds, both organic and inorganic, especially those used in medicine or the arts. The different combinations and decompositions must be explained by equations; also the *qualitative* analysis of the more important chemicals, *e.g.*, nitrates, chlorides, carbonates, sulphates, phosphates, oxalates, tartrates, &c., and the detection of impurities in them, and the *volumetric* estimation of the strength of all Pharmacopœia preparations in which standard solutions are ordered to be used. An elementary knowledge of the properties of light, heat, electricity, and magnetism is also required.

The examination lasts two days, the first being wholly devoted to practical chemistry. Next day the candidate is examined orally in chemistry and physics, botany, and materia medica. In the practical portion of the examination standard works of reference are provided for the use of candidates, at the discretion of the examiner. No other books or memoranda are allowed.

WHERE TO BE TRAINED FOR THE PHARMACEUTICAL EXAMINATIONS.

Very few attempt to pass the Minor examination nowadays by private study. It can be done, and is done; but it is greatly to the advantage of the student to have a proper training in an efficient school. In all cases the teachers keep in view the main object of study, viz., to pass the examinations, and at the same time they are regardless of the importance of a sound education in the business of pharmacy. We believe that there are very few students who really desire to be crammed for the examinations, and for that very reason the principal schools discountenance cram work. It is ever so much easier for a teacher to educate thoroughly than to cram. The main things for the student to consider in selecting a school are: the location of the school, the cost of the education, and its reputation. In the following we give information thereanent. Students who wish to know more about the organisation of the classes in the schools should write to the secretaries for prospectuses.

THE SCHOOL OF PHARMACY, 17 Bloomsbury Square, London, W.C.

This school is subsidised and controlled by the Pharmaceutical Society, by which it was founded in 1842. It has a staff of three professors and two lecturers, who are assisted by competent demonstrators. The premises of the Society provide ample accommodation for lectures and tutorial classes, and the chemical laboratory is large and excellently appointed. Staff:—

Professor Attfield, Ph D., F.R.S., F.I.C., F.C.S., assisted by Mr. F. W. Short (demonstrator) and Mr. H. D. Fuge (assistant demonstrator).—Practical chemistry.

Professor Wyndham R. Dunstan, M.A., F.I.C., F.C.S.—Chemistry.

Professor Joseph R. Green, M.A., B.Sc., F.L.S.—Botany.

Mr. Joseph Ince, F.L.S., F.C.S.—Pharmacy and practical pharmacy.

Mr. Edward Morell Holmes, F.L.S.—Materia medica.

Periods of Study.—The next session commences on October 2, and terminates at the end of July, 1890. Minor, Major, and other students can enter at any period, but as there are two distinct courses of study it is better for the former to join the classes in October. For such the course of instruction extends from the beginning of October to the end of March, so far as chemistry, botany, and materia medica are concerned. There are two five-months courses of instruction in pharmacy. In the chemical laboratory there are two courses of instruction—junior and senior; the former covers the Minor period. The second course begins about April 21, and extends to the second week in July. New sections of elementary work commence at the beginning of January and (in chemistry only) at the beginning of March.

Courses of Instruction.—The lectures last for an hour. Professor Dunstan lectures on Mondays, Tuesdays, and Wednesdays at 9 A.M.; Professor Green on Fridays and Saturdays, and Mr. Holmes on the Thursdays, at the same hour. Demonstration classes are also held by these teachers, and also by Mr. Ince, whose lectures and demonstrations are given three times a week, on Tuesdays, Thursdays, and Fridays, at 5 P.M. The chemical laboratories are open from 10 A.M. to 5 P.M., on Saturdays until 2 P.M. Students may work for any period, from two hours to the whole day.

Fees.—Chemistry, first course, 4*l.* 4*s.*; second course, 2*l.* 2*s.* Botany, first course, 3*l.* 3*s.*; second course, 2*l.* 2*s.* Materia medica, session, 2*l.* 2*s.* Pharmacy, five months, 2*l.* 2*s.* for demonstrations, and the same for lectures. Practical chemistry: The lowest fee is 2*l.* 2*s.* for two hours work daily for one month. For six months, two hours' daily, the fee is 8*l.* 10*s.* A student paying 26*l.* 5*s.* has the right to work in the laboratories at any time they are open during a session (ten months). Those who take two courses of lectures get a reduction of 1*l.* 1*s.*

SOUTH LONDON SCHOOL OF PHARMACY (LIMITED).

325 Kennington Road, London, S.E.

Founded by Dr. John Muter in 1863, and now conducted by a limited company, of which he is the principal director. The premises are situated in one of the most accessible

districts of London, and include chemical and pharmaceutical laboratories, museum, dispensary, and lecture-rooms. This is a good school.

Staff.—Dr. Muter, M.A., F.R.S. Edin., F.I.C., F.C.S., &c., chemistry, physics, and botany; W. H. Dodd, F.C.S., &c., materia medica and pharmacy; L. De Koningh, F.I.C., F.C.S., analytical chemistry; W. Townsend, A.C.P. and Lond. Matric., Latin, mathematics, and mechanics.

Periods of Study.—The present session commenced on September 17, and continues until the middle of July, 1890. A fresh course of lectures (commencing at the foundation of each subject) is started on or about January 10 and April 15. There are Minor and Major classes. The laboratories open at 9 A.M., and classes go on at intervals all day until 5 P.M., except between 1 and 2 P.M., when there is a recess.

Instruction and Fees.—The instruction given is by lectures, where these are a proper means of education, and by tutorial classes, demonstrations, and supervised self-study in the museum and laboratories. The compounding fees (advance) are: (1) Three months' instruction in all subjects for the Minor, 10*l.* 10*s.* This fee entitles any student to remain in the same classes for as long a period as he likes on payment of the laboratory fee of 2*l.* 2*s.* per month. (2) Three months' instruction in all subjects for the Major, 12*l.* 12*s.* Thereafter laboratory fee of 3*l.* 3*s.* per month.

WESTMINSTER COLLEGE OF CHEMISTRY AND PHARMACY, Trinity Square, Borough, London, S.E.

Principals, Mr. G. S. V. Wills, F.L.S., F.R.M.S., &c., and Mr. H. Wootton, assisted by demonstrators. Established in 1872. This college claims to be the largest pharmaceutical school in Great Britain, and there is ample evidence that it is so, for since it was established about 2,500 have passed through it, and last year 145 of its pupils passed the Minor and 14 the Major examination. The premises are well adapted for the purposes of tuition, are commodious, and within ten minutes' walk from London Bridge.

The session commences early in September and extends to the end of July. It is divided into terms of seven weeks' duration, but a complete course of instruction extends over fourteen weeks.

Instruction.—All subjects for the Preliminary, Minor, and Major are taught. For the Preliminary students attend from 10 to 12 daily, and for the Minor and Major the whole day from 9.30 A.M. to 5 P.M., except on Saturdays, when the school closes at 1 P.M. For the Minor and Major there are courses of lectures in all subjects, particulars of which are given in the college prospectus, which students should get. Practical instruction in botany, chemistry, dispensing, &c., is also given, while the recognition of specimens and prescription-reading are a feature of the Minor instruction.

Fees.—Preliminary (three months), 3*l.* 3*s.*; Minor, 6*l.* 6*s.* per course (fourteen weeks), or 12*l.* 12*s.* until qualified. Twelve months' tuition, Minor and Major, 15*l.* 15*s.* Practical dispensing (twelve weeks), 12*s.* Major, 4*l.* 4*s.* per term, or 10*l.* 10*s.* until qualified. Evening classes are held. There is a private residence attached to the college, wherein board and lodging are provided at a moderate rate.

THE CENTRAL SCHOOL OF CHEMISTRY AND PHARMACY, 173 Marylebone Road, London, N.W.

Principal, Mr. John Woodland, F.L.S., F.C.S., &c.; Demonstrator, Mr. T. A. Ellwood, A.I.C., F.C.S., &c. This school was founded in 1877. The premises, which comprise two chemical laboratories, lecture-room, dispensary, and students' rooms containing materia medica, botanical, and pharmaceutical specimens, are situated in Marylebone Road, close to the Edgware Road and Baker Street stations on the Metropolitan Railway, and can be easily reached from all the London termini.

The present session commenced on September 3, the work entered upon being intended for those who wish to present themselves for the examinations in October and December. The session is divided into three complete courses. The next commences in January, and terminates at the April examinations; and the third extends from April to the July examinations.

Instruction.—The classes for Minor and Major students are, of course, distinctly different, and students

work each day of the week except Sunday. From an analysis of the time-table we find that there are four lectures in chemistry per week, three in botany and materia medica, with an hour and a half at practical botany; ten hours' work at practical chemistry, and ample time devoted to prescription-reading, pharmacy, and practical dispensing. The instruction for Major students is equally liberal.

Fees.—Entire session, 21*l.*; first and second courses, 10*l.* 10*s.* each; third, 8*l.* 8*s.* Additional fee for dispensing class (Minor students only), 1*l.* 1*s.* per six weeks. There are special fees for students taking part of a course.

OTHER METROPOLITAN SCHOOLS.

CITY INSTITUTE, 30 and 32 Ludgate Hill, E.C.—Principal, Mr. J. Coates. Instruction is given here in the subjects of the Preliminary examination; also in botany, zoology, chemistry, materia medica, and practical pharmacy.

THE CITY SCHOOL OF CHEMISTRY AND PHARMACY (LIMITED), 27 Chancery Lane, London, W.C.—Director, Mr. Maurice Williams.

THE PRIVATE SCHOOL OF PHARMACY AND PHARMACEUTICAL CHEMISTRY.—Principal, Mr. Jas. W. Saunders, 65 Euston Road, N.W. The session commenced September 3, and terminates July 24. The course of studies includes all subjects required for the pharmaceutical examinations. Fee for the course, 15*l.* 15*s.*

THE LIVERPOOL SCHOOL OF PHARMACY,

36 Oxford Street, Liverpool.

Principal, J. S. Ward, F.C.S.; assisted by demonstrators. This school was founded in 1882, and throughout its seven years' career has accomplished excellent work. Without entering into detail regarding its successes, we may simply say that the school is one which students can rely upon as being efficient and thorough. The premises consist of a laboratory, two class-rooms, museum, pharmacy-room, and balance-room. The classes for Minor students commenced on September 2, the session being divided into three courses, instead of two, as hitherto, viz.:—(1) September to December examination; (2) January to April examination; and (3) April to July examination. Instruction is given also in the subjects for the Preliminary and Major. The Minor curriculum of study consists of lectures in chemistry and physics, botany, materia medica, pharmacy, and prescription-reading, with private and individual tuition in all the subjects, as well as individual work in the laboratory and dispensary. There are four systems of classes, in addition to "day" classes, viz., "evening," "afternoon," "once-a-week," and "morning"—each with its own scale of fees.

Fees.—8*l.* 10*s.* per course, and 2*l.* per month thereafter. We only quote for the "day" classes, which occupy the whole day, from 10 A.M. to 5 P.M.

MANCHESTER COLLEGE OF CHEMISTRY AND PHARMACY,
225 and 227A Oxford Street, Manchester.

Principal, Mr. W. Spencer Turner, pharmaceutical chemist. Established in Grimsby 1878, and removed to Manchester in 1882.

The system of instruction at this school differs somewhat from others which have been referred to, in that there are no lectures. The students work themselves, and Mr. Turner directs and assists them in that work. The aim is to accustom the students to *viva voce* examinations, and, as the Manchester college classes are not allowed to grow beyond a certain number, the system works very satisfactorily. In addition to the classes for the Preliminary examination, there are three distinct sets of classes for the Minor, viz., full-time class, working from 9 A.M. to 4 P.M. daily, except Saturday. This class takes about three months to go through the subjects, and the fee is 9*l.* 9*s.* for such a course. The afternoon and evening classes are largely taken advantage of by Manchester assistants and apprentices. The fee for these is 1*l.* 1*s.* per month, with a reduction when the complete course is taken. Three sets of Major classes are also conducted, and Mr. Turner informs us that he finds the number of students in this department on the increase. The fee for the full-time class is 11*l.* 12*s.* 6*d.* per month.

THE OWENS COLLEGE, MANCHESTER.

The educational facilities of this excellent institution are open to pharmaceutical students, there being a special course of instruction adapted to their requirements. Teachers:—Professor Dixon, chemistry and chemical physics; Professor Williamson, botany; Mr. W. Elborne, materia medica, pharmaceutical chemistry, pharmacy, and dispensing.

The session commences on October 1 and extends to the end of March. There are day and evening classes; the former occupying the whole day (practically) from 9.30 A.M. to 5.30 P.M. The evening classes are held on each day of the week (except Saturday and Sunday) from 6 (or 7) to 9 o'clock.

Fees.—For the day classes, 18*l.* 18*s.*, which includes lectures and practical instruction in all the subjects for the Minor or Major. The total fees for the evening classes are 11*l.* 11*s.* They include the following:—

Chemistry.—(i.) Course on the Non-Metallic Elements (Professor Dixon). (ii.) Course on the Metals (Dr. Cohen). Fee for each course, 10*s.* 6*d.* (iii.) Laboratory Course (four hours per week). Fee, 4*l.* 4*s.*

Botany.—Professor Williamson. Fee, 1*l.* 1*s.*

Pharmaceutical Chemistry (fee, 1*l.* 11*s.* 6*d.*), *Materia Medica* (fee, 1*l.* 11*s.* 6*d.*), and *Pharmacy and Dispensing* (fee, 2*l.* 2*s.*)—all by Mr. W. Elborne.

ASSOCIATION SCHOOLS.

Birmingham.—The Midland Counties' Chemists' Association are prepared to teach students chemistry, botany, materia medica, and pharmacy if a sufficient number of students come forward to form classes, which would meet in Mason's College, where the association has rooms. Particulars can be obtained from Messrs. Chas. Thompson, 159 Stratford Road, Sparkbrook, and F. H. Alcock, Temple Chambers, Broad Street Corner, Birmingham.

Newcastle-on-Tyne.—Classes are held at the College of Science, Barras Bridge, under the auspices of the North of England Pharmaceutical Association; subjects: chemistry, botany, materia medica, and pharmacy. Apply to Mr. Ford, care of John Ismay & Sons, Groat Market, Newcastle-upon-Tyne.

Leicester.—The local Chemists' Association make a feature of evening classes, but we have not received particulars. The secretary is Mr. J. H. Shepherd.

Nottingham.—There is a special course of instruction for pharmaceutical students in the University College, Nottingham. Chemistry lecture on Tuesday at 3 P.M., and three hours' laboratory work per week, 21*s.* (during the first two terms of the College). In the third term there will be a course on organic chemistry on the same day of the week, fee 7*s.* 6*d.* A course on materia medica will be given during the first two terms on Thursday afternoons at three. fee 15*s.* For further particulars apply to Mr. Widdowson, 147 North Sherwood Street.

Oldham.—The members of the Pharmacy Students' Association here meet for study. Mr. C. Granville Wood, 30 High Street, Oldham, will furnish particulars.

Sheffield.—We have not received particulars of the classes conducted by the Association in this town.

EDUCATION IN SCOTLAND.

Aberdeen.—The North of Scotland Society of Chemists and Druggists has a suite of rooms in Bridge Street, Aberdeen, one of which is a nicely-fitted chemical laboratory, wherein students have permission to work on application to the secretary, Mr. Alexander Strachan. There are also a museum and library. Students are admitted to the classes at Robert Gordon's College.

Dundee.—A course of practical chemistry is specially arranged in University College for pharmaceutical students, to whom the other classes in the college are open (see page 422). Evening classes are conducted in the Technical Institute (associated with the college) at low fees.

Edinburgh.—For particulars of the university and college classes apply to Mr. J. Rutherford Hill, 36 York Place, Edinburgh. Evening classes in botany, chemistry, and physics—suitable for pharmaceutical students—are held at the Heriot-

Watt College. Mr. Wm. Duncan conducts day and evening classes on the tutorial principle at the Royal Dispensary, West Richmond Street, which has been furnished with new class-rooms and laboratory. Dr. Drinkwater, F.C.S., instructs Minor and Major pupils in the scientific subjects of the examinations at his laboratories, 31 Chambers Street. Mr. R. Urquhart, assisted by lecturers, receives pupils for the Minor and Major at the dispensary, Marshall Street, Nicholson Square.

Glasgow.—Mr. David Lees, L.R.C.P. & S.E., ex-Ph.C., receives pupils at his chambers, 180 West Regent Street. The College of Science (Andersonian) is an excellent place for the scientific subjects of the "Minor" and "Major."

POSTAL SYSTEM OF INSTRUCTION.

The object of this system is to assist students in private study; and as a course preparatory to subsequent work at a school, or under the direct supervision of a tutor, the postal system is undoubtedly highly advantageous. Mr. JAMES TULLY, chemist, Hastings, has two divisions of his system, junior for students under, and senior for those over, 20 years of age. The fee is 1*l.* 1*s.* The method consists in sending lessons weekly, and examination-papers at like intervals, to test the student's progress. The student must answer correctly before he goes further. The course occupies twelve months, but can be limited to any less time.—WILLS'S POSTAL SYSTEM is conducted by the Westminster College of Pharmacy. In the case of the Minor there are a hundred printed lectures, which the student can have at the rate of two or more per week, so that the course may last a year or less time, and the cost is 1*l.* 1*s.* The lectures are sent to the student at his own expense, and he returns them at the end of a week. Then he gets more. The plan generally followed is to copy the lectures in note-books, and it is surprising how well they keep up the interest in the work. To those who have no other means of assistance in their studies we would undoubtedly recommend the postal system. Mr. J. W. SAUNDERS, 6 Rochester Square, London, N.W., also gives instruction by post; fee. 1*l.* 1*s.*

SOCIETY OF APOTHECARIES, LONDON, ASSISTANTS' DIPLOMA.

The assistant's or dispenser's diploma of the Society of Apothecaries is worth taking by those students who reside in or come to London for study. The certificate is accepted by hospitals as proof of the holder's qualifications to dispense medicines. Those who cannot make such use of it can at least frame the diploma and display it in their shop when they get one.

The Examination.—Candidates are expected to show a general knowledge of structural and physiological botany, to describe and identify typical specimens, and to give the distinguishing characters of the following natural orders:—Compositæ, Convolvulaceæ, Cruciferae, Cucurbitaceæ, Labiatae, Leguminosae, Liliaceæ, Melanthaceæ, Papaveraceæ, Ranunculaceæ, Rosaceæ, Scrophulariaceæ, Solanaceæ, Umbelliferae. The other subjects in which they are examined are the translation of prescriptions, the British Pharmacopœia, materia medica, pharmacy, and pharmaceutical chemistry. The examination is held on the third Thursday of every month, and the fee is 2*l.* 2*s.* The Society's Botanical Gardens at Chelsea are open to students on application to the secretary. In the summer months there is a course of lectures on botany at the gardens, which all who can should attend, as they cost nothing. Application regarding this and other matters should be made to the Secretary, Dr. Thomas Peregrine, at the Apothecaries' Hall, Blackfriars, E.C.

IRELAND.

Chemists and druggists in Ireland, except those in business before 1875, may not sell poisons, and none are permitted to dispense medical prescriptions. The latter function is reserved to pharmaceutical chemists and licentiates of the Society of Apothecaries. To become a pharmaceutical chemist two examinations must be passed, the conditions and subjects of which we append.

PRELIMINARY EXAMINATION.

This examination is held at 11 Harcourt Street, Dublin, on the first Mondays of January, April, July, and October, at 2 P.M. Candidates must be at least 16 years old. They must give notice to the Registrar (Mr. Arthur T. Ferrall) at the above address, and pay the fee of 2*l.* 2*s.* to the credit of the Society at the Bank of Ireland. If the candidate fails to pass he may be examined again in six months without further payment. The following are the subjects of the examination:—

LATIN.—To translate into English, and parse, one or more sentences from a Latin author:—Caesar's "Commentaries," First Book; or Virgil's "Æneid," First Book.

ENGLISH.—English grammar, including orthography and parsing. To write on a subject selected by the examiner; and to write from dictation.

ARITHMETIC.—The first four rules, simple proportion, and decimals. To describe the weights and measures of the Pharmacopœia, and of the metric system.

THE RUDIMENTS OF BOTANY AND CHEMISTRY AND PHYSICS:—

1. **BOTANY.**—The morphology of the plant.

2. **CHEMISTRY AND PHYSICS:—General Properties of Matter:—**Principal characteristics of solids, liquids, and gases. *Weight and Measure:—*Relations between, both in the British and in the metric system. *Specific Gravity:—*Definition of—commonly known modes of obtaining—in solids and liquids. *Temperature:—*Effects of change of—on gases, and generally on solution of solids. *Thermometer:—*Conversion of F. scale into C. scale, and *vice versa*—theory of construction of. *Atmospheric Pressure:—*Boyle's law—barometer—principle of—construction of mercurial—relation of columns of various fluids which might be used—aneroid. *Elements and Compounds:—*Into what broad classes subdivided—examples—general properties, sources, and mode of preparation of N. C. P. Hg. Fe. Pb. Cu. S. O. H. K. Na. I. Br. and Cl.—conditions under which chemical combination occurs—distinction between chemical and physical change—combustion—examples—combination by weight—law of multiple proportions—atomic theory—atoms—molecules—atomic weight—valency—law of Avogadro—alkalies—acids—salts—symbols—formulae—equations—exercises. *Allotropism, Isomerism:—*Examples. *Atmosphere:—*Physical and chemical constitution—impurities—how affected by respiration of animals, action of plants, and by combustion. *Water:—*Composition of—synthesis—varieties of—impurities.

The examinations accepted by the General Medical Council and the Preliminary examination of the Pharmaceutical Society of Great Britain will be accepted in lieu of the Preliminary examination of this Society; but it must be passed at least two years before the candidate presents himself for the licence as a pharmaceutical chemist. The usual fee must be paid. Before proceeding to the

LICENCE EXAMINATION

certain regulations must be complied with. Those who passed the Preliminary examination before 1884 must have been engaged two years, and those who have passed since then must have been engaged four years, as apprentice or assistant with a pharmaceutical chemist (Ireland or Great Britain), chemist and druggist (Great Britain), or apothecary. A certificate to that effect must be submitted. Those who passed the Preliminary examination before 1879 are not required to produce any other certificate, but those who have passed since must, along with their application, forward a certificate showing that they have attended a course of practical chemistry, of not less than three months' duration (and 100 clear hours at the bench), in the laboratory of one of the following institutions, viz.:—

The Carmichael College, Aungier Street, Dublin.

The Cecilia Street School of Medicine, Dublin.

The Government School of Science, South Kensington.

The Ledwich School of Medicine and Surgery, Peter Street, Dublin.

The Queen's College, Belfast.

The Queen's College, Cork.

The Queen's College, Galway.

The Royal College of Science for Ireland, Dublin.

The Royal College of Surgeons in Ireland, Dublin.

The Working Men's Institute, Belfast (Chemical School).

Trinity College, Dublin.

Certificates issued before July 1, 1888, will be accepted, if they show an attendance of not less than three-fourths of a three months' course. Candidates are also recommended to produce certificates from one of the afore-named schools of having attended a course of materia medica.

The examinations are held at 11 Harcourt Street, Dublin,

on the first Wednesday and two following days of January, April, July, and October, commencing at 11 A.M. Candidates must give notice, and pay the fee (5*l.* 5*s.*) fourteen clear days before the examination is held.

FORM OF NOTICE.—"I, _____, of _____, desire to be examined for the Licence to act as a pharmaceutical chemist."

SUBJECTS OF EXAMINATION.

BOTANY.—To recognise the principal indigenous plants used in medicine, to refer them to their natural orders, and to give the definitions and the distinctive characters of their several parts.

MATERIA MEDICA.—To recognise specimens of the drugs of the Pharmacopœia, to describe their characters and active principles, name the sources from which they are obtained, and the official preparations into which they enter; and to detect adulterations.

GENERAL AND PHARMACEUTICAL CHEMISTRY.—The elementary laws of chemistry and physics, including chemical equations. To recognise the chemical substances of the Pharmacopœia; to describe the processes by which they are obtained; qualitative analysis (including the tests of the Pharmacopœia) and volumetric analysis; and to submit to a practical examination in these subjects.

PRACTICAL PHARMACY.—To translate Latin prescriptions; to detect dangerous doses; to compound and dispense correctly.

To explain the processes of making the non-chemical preparations of the Pharmacopœia, and to recognise them.

SCHOOL OF PHARMACY.—Under the direction of the court of directors of the Apothecaries' Hall.—At this school instruction is given in pharmacy, the course comprising:—

(1) Preliminary: Pharmaceutical nomenclature and abbreviations; the weights and measures of the British Pharmacopœia, and how to use them; the processes and apparatus of the British Pharmacopœia, viz. filtration, maceration, percolation, trituration, pill-making, plaster-spreading, &c. (2) Official pharmacy: Systematic exercises in the preparation of official compounds, and the application of the Pharmacopœia tests for purity. (3) Extemporaneous pharmacy: The reading in full Latin, compounding and dispensing of prescriptions, and the study of incompatibles. Fee for a three months' course, 3*l.* 3*s.* For further particulars apply to Mr. C. Wright, 40 Mary Street, Dublin.

Apothecaries' Assistant's Certificate.—Persons seeking to obtain this certificate must produce proof—(1) of being not less than sixteen years of age; (2) of having spent two years at practical pharmacy under the superintendence of a duly registered apothecary or pharmaceutical chemist; (3) of good moral conduct. The examination for the certificate of assistant is held on the first and last Fridays in each month (with the exception of the month of August), at the Apothecaries' Hall, Mary Street, Dublin, at 2 P.M., and embraces the subjects of pharmacy, practical and theoretical, materia medica, the British Pharmacopœia, and the correct translation and compounding of medical prescriptions. Fee for examination and registration, 1*l.* 7*s.*

PHARMACY IN THE SERVICES.

Army.—Compounders of medicine in the army are members of the Medical Staff Corps. The duties of such persons, as set forth in the "Regulations for Medical Services," part II., par. 41-43, are to keep all drugs and poisons under proper conditions, to dispense prescriptions and copy them, and to keep and prepare all returns for the supply, &c., of medical stores, surgical instruments, &c. The following are the official regulations for the training and examination of persons who desire to become compounders:—

Non-commissioned officers or privates desirous of qualifying as compounders undergo a course of training and instruction under the personal superintendence of the medical officer in charge, or of a medical officer deputed by him, and under a duly qualified compounder in the surgery of a hospital for at least six months in the following subjects:—

(a) The Latin names and words used in prescriptions, and on the printed labels used in a dispensary.

(b) *Pharmacy.*—The various articles of materia medica and preparations in the British Pharmacopœia.

(c) *Drugs and Pharmaceutical Remedies.*—Appearances, taste, odour.

(d) *Medicines containing Active Ingredients.*—Their composition, and the exact quantities of the important ingredients.

(e) *Poisons.*—Names, characters, dangerous doses, antidotes, and remedial measures to be adopted in cases of overdose.

(f) *Infusions and Decoctions.*—Preparation and preservation.

(g) *Fomentations.*—Preparation and application.

(h) *Extracts.*—Preservation and characters, when altered by age, climate or neglect.

(i) *Tinctures and Liniments.*—Strengths, preparations, and compositions.

(k) *Lotions and Washes.*—Preparation and mode of application.

(l) *Prescriptions.*—Reading, making up, labelling, and mode of administration of the remedies ordered.

(m) *Surgical Instruments and other Appliances.*—As to the names and proper care.

(o) *Returns.*—The preparation of all returns, requisitions, and other documents required for the receipt, expenditure, and supply of surgical instruments, medical stores, medicines, &c.

A corporal is not eligible for promotion until he has passed as a compounder of medicines.

Entrance to the Medical Staff Corps is obtained by enlistment, individuals meeting the usual requirements as to height, other physical measurements and fitness, &c. Pay ranges from 1*s.* 6*d.* per day for third-class private to 5*s.* 6*d.* on promotion as a warrant officer.

Navy.—There are no positions in the navy similar to those in the army, as surgeons on board ship do their own dispensing, but the Admiralty department appoint "Minor" or "Major" men to dispenserships at the limited number of naval hospitals throughout the world. These are good positions, both at home and abroad, the remuneration being fair and the duties honourable. At present the regulations are undergoing revision, so we are compelled to refer inquirers to the Medical Superintendent, Admiralty Department, Whitehall.

THE HONOURS OF PHARMACY.

There are comparatively few honours open to pharmacists. For students the most important are the scholarships ("Bell" and "Redwood") offered by the Pharmaceutical Society to those who have passed the preliminary examination and are apprentices of the Society at the time of giving notice of their intention to compete. They must have served three years in a pharmacy, and be not less than 20 nor more than 22 years of age. The examination is held annually, at the same time and places as the July Preliminary, and the subjects are:—English, Latin (Virgil, Latin prescriptions, &c.), arithmetic, elementary botany, elementary chemistry, pharmacy, and French or German. The two persons receiving the highest numbers of marks—providing they reach a minimum—receive Bell scholarships, which are of the value of 30*l.* in cash, exclusive of books (value 2*l.* 10*s.*) and apparatus, and free education in the School of Pharmacy for a year. The third candidate receives the Redwood scholarship, tenable for a year, and of the value of 20*l.*, without free education. The Redwood scholar must pursue his studies in the School of Pharmacy. Knowing the value which youths place upon personal experience, an old Bell scholar sends us the following brief account of how he prepared for the examination:—

My attention was drawn to the Bell Scholarships three years prior to my success in gaining one. The whole of the time intervening which business duties permitted was devoted to the work (averaging about three hours daily). For French, arithmetic, and English no special books were employed, as I relied mainly upon the knowledge I already possessed, though I occasionally worked through the papers set at previous examinations. *Latin.*—Virgil's *Æneid*, books I., II., and III. (Macmillan's texts) were found convenient, and the grammatical points illustrated thereby were carefully studied. For prescription Latin, Pereira's "Selecta e Prescriptis" is indispensable, though some parts are unnecessary. Ince's "Grammar" will also be found useful.

Chemistry.—Roscoe's "Chemistry" and Attfield's "Manual" may be used as text-books. If the student will devote time to the practical side of the subject, he will find the acquisition of the theoretical much facilitated. In my own case I found the students' competitions of THE CHEMIST AND DRUGGIST of great value. *Botany.*—In the absence of instruction I found Oliver's "Botany" and Bentley's "Botany" most easy to follow. In order to acquire even an elementary knowledge of the subject actual specimens must be obtained and compared with descriptions given. It is highly important for intending candidates to acquire, by practice, the art of expressing their answers in a clear and concise manner.

Candidates desiring to compete for these scholarships must send notice to the Secretary of the Pharmaceutical Society on or before June 1, accompanied by

certificates of age, and testimonials from their previous employers or masters as to capability, industry, and general conduct.

Pharmaceutical chemists who were Associates of the Society at the time of passing the Major examination are entitled to compete for three prizes at the end of the session in which they passed the Major examination. First prize, Pereira medal in silver and books, value 5*l.*; second prize, the Society's silver medal and books, value 3*l.*; third prize, the Society's bronze medal, and books, value 2*l.* Subjects of examination: *Materia medica*, botany, and chemistry. The competition takes place after the ordinary examinations in July. Candidates may enter for London or Edinburgh.

MEDICAL.

THE medical, or noble, profession, as it is sometimes called, is overstocked. So those who are in it declare, but we accept the statement at a liberal discount. There are many medical practitioners who have a hard struggle in poor localities, and scarce keep body and soul together on the 6*d.* fees they get. But it would be ridiculous to say that these constitute more than a small percentage of the profession, and while the dread of such an impoverished existence may keep out some, the possibility of reaching a position of honour, influence, and probably affluence, induces many to enter the ranks. On the whole, the chances of success are better in medicine than in any other profession, but the risk is infinitely greater, the work more arduous, and the responsibility more onerous. Everyone is not suited for it; we know of many who have had to give it up when they reached the practical anatomy stage, and many who, though mentally and physically fit, have been too weak to withstand the severe moral strain which student days subject everyone to. Thus it is that "the choice of the profession of medicine should be made," says the *Lancet*, "only after the most careful consideration of its aims and requirements, and after a diligent endeavour on behalf of the would-be student to discover whether he is fitted to undertake the responsibilities of the calling. Some men enter the profession who, though they succeed in obtaining a qualification and manage to eke out a livelihood by its practice, are yet unfitted for the work. They may possess a physical organisation incapable of withstanding the arduous bodily labour which every country practitioner is called upon to perform; their voice may contain not a single chord the vibration of which brings comfort to the ear of the restless sufferer; a mind, untrained to methods of comparison and devoid of judicial balance, may constantly lead their judgment astray; or a manner, brusque and abrupt, may make them out of place in a sick-room. To such men the earning of the honourable competency within the reach of all capable practitioners is a matter of the hardest toil, and they find absolutely no delight in the exercise of a calling utterly unsuited to their tastes."

HOW TO BECOME A MEDICAL PRACTITIONER.

The curriculum of studies required by all qualifying bodies in the United Kingdom extends to forty-five months (four winter and three summer sessions). A medical diploma qualifying the holder to registration as a medical practitioner may be granted to those only who are 21 years of age, and who pass a satisfactory qualifying examination in medicine, surgery, and midwifery, held by any university in the United Kingdom, medical corporation, combination of two or more corporations, or combination of two or more universities. The curriculum of study must be undergone at a recognised school or university. On proceeding to this curriculum the individual should apply for registration as a medical student.

No person is registered as a medical student unless he has previously passed (at one or more examinations) a preliminary examination in the following subjects, and produces evidence that he has commenced medical study:—

1. English language, including grammar and composition.
2. Latin, including grammar, translation from specified authors, and translation of easy passages not taken from such authors.
3. Elements of mathematics, comprising (a) arithmetic, including vulgar and decimal fractions; (b) algebra, including simple equations; (c) geo-

metry, including the first book of Euclid, with easy questions on the subject-matter of the same.

4. Elementary mechanics of solids and fluids, comprising the elements of statics, dynamics, and hydrostatics.

5. One of the following optional subjects:—

(a) Greek, (b) French, (c) German, (d) Italian, (e) any other modern language, (f) logic, (g) botany, (h) zoology, (i) elementary chemistry.

Students are registered by W. J. C. Miller, B.A., Registrar of the General Council and of the Branch Council for England, 299 Oxford Street, London, W.; James Robertson, Registrar of the Branch Council for Scotland, 1 George Square, Edinburgh; and R. L. Heard, M.D., Registrar of the Branch Council for Ireland, 35 Dawson Street, Dublin. The General Medical Council does not conduct a Preliminary examination; it simply requires that the student shall have passed an examination in the above-named subjects, and is very liberal in the acceptance of certificates granted by universities and other examining bodies. For instance, all mentioned on page 407 are accepted. So are the Preliminary and Minor examinations of the Pharmaceutical Society of Great Britain *pro tanto*, and the Preliminary examination of the Pharmaceutical Society of Ireland *pro tanto*, thus leaving anyone who holds evidence of having passed these examinations only algebra, geometry, and mechanics to pass. The College of Preceptors conducts a special examination for medical students in March and September of each year, the fee being 25*s.*, exclusive of the local fee payable to those who may conduct the examinations at Birmingham, Bristol, Leeds, and Liverpool. The subjects of the examination are those given above, and we may add that the college allow those who have passed the Preliminary examination of the Pharmaceutical Society to enter for the rest of the subjects only. The Apothecaries' Company do likewise.

The next thing after passing the Preliminary examination is to decide whether the student wishes to get a medical degree or a diploma only. Universities confer degrees, and all, except the London University, teach. Medical students in London schools content themselves in most cases with L.S.A., or the double qualification, while a few proceed to the degrees of the London University, or, taking out part of their time at a teaching university, such as Durham or Edinburgh, qualify, by residence, for degrees. There is a distinct advantage in having a degree, and we strongly urge the student to aim for one. At the same time it may be said that there are eminent men in the profession who have not been so fortunate as to qualify in this direction.

THE CURRICULUM.

A good idea of the medical curriculum and examinations is obtained from the recommendations of the General Medical Council in regard thereto, and which are so respected by qualifying bodies that they take them as the basis of their regulations.

The following, according to the Council, are the subjects without a sufficient knowledge of which no candidate should be allowed to obtain a qualification entitling him to be registered:—(1) Chemistry, including the principles of the science, and the details which bear on the study of medicine and the rudiments of heat, light, and electricity; (2) Anatomy; (3) Physiology; (4) *Materia medica* and pharmacy; (5) Pathology; (6) Medicine, including medical anatomy, clinical medicine, and therapeutics; (7) Surgery, including surgical anatomy and clinical surgery; (8) Midwifery, including diseases peculiar to women and to newly-born children; (9) Theory and practice of vaccination; (10) Forensic medicine; (11) Hygiene; (12) Mental disease.

There should be at least three professional examinations, the final not taking place till the termination of the full period of medical study. Every candidate for the final professional examination should be required to give evidence that he has had sufficient opportunities of practical study, with care of patients—medical, surgical, and obstetrical—in hospital, dispensary, or elsewhere. In addition to the requirements with respect to hospital attendance and duties, all candidates for the final examination should be required to produce evidence that they have—under proper supervision—taken part, as pupils, for six months in the practice of a recognised public dispensary, including the visitation of patients at their own homes; or in the out-patient practice of a recognised hospital; or should have acted for six months

as pupil to a registered practitioner, either holding such a public appointment or having such opportunities of imparting practical knowledge as shall be satisfactory to the examining bodies. They should also be required to produce evidence that they have—so far as local circumstances will permit—studied fevers for not less than three months, under recognised clinical instructors. Every student should be required to attend for three months the indoor practice of a lying-in hospital, or to have been present at not less than twelve labours, at least three of which he should have conducted personally, under the direct supervision of a registered practitioner.

These are the principal recommendations, and they give a fair and general view of the requirements of the medical qualifying bodies.

MEDICAL DEGREES.

In the following we give concise particulars of the conditions which are required by the chief universities.

London University.—This University grants four medical degrees, viz., M.B., B.S., M.S., and M.D. The M.B. must be taken first, as only Bachelors of medicine are allowed to proceed to the other degrees. Candidates must pass the matriculation and preliminary scientific examinations before proceeding to their medical studies. The matriculation examination comprises the following subjects:—1. Latin; 2. Greek, French, German, Sanskrit, or Arabic (one only); 3. English language, English history and modern geography; 4. Mathematics; 5. Mechanics; 6. Experimental science—(a) chemistry, (b) heat and light, or (c) magnetism and electricity. This examination is held in London in January and June of each year (fee 2*l.*). The January examination will also be held at Birmingham, Cardiff, Glasgow, Leeds, and Portsmouth. That appointed for June 1890 will be held also at Bangor, Birmingham, Cardiff, Edinburgh, Epsom, Leeds, Liverpool, Manchester, Newcastle-on-Tyne, Nottingham, and Sheffield. The subjects of the preliminary scientific examination are:—1. Inorganic chemistry (theoretical and practical); 2. Experimental physics; 3. General biology. For honours other subjects, such as botany and zoology, may be taken. The examination is held in January and July, fee 5*l.* Two years must be devoted to medical study after passing the matriculation examination, after which the student (being 19 years of age) may proceed to the intermediate examination (fee 5*l.*), the subjects of which are: Anatomy, physiology and histology, organic chemistry, materia medica, and pharmaceutical chemistry. The final examination for bachelor of medicine cannot be passed before the age of 21. Certificates are required of attendance on lectures subsequent to the intermediate examination, of hospital practice for two years, of charge of patients during six months, of having conducted twenty labours, of proficiency in vaccination, and of moral character. The subjects are:—General pathology, general therapeutics, and hygiene; surgery, medicine, obstetric medicine, and forensic medicine. The examination includes questions in surgical and medical anatomy, pathological anatomy, and pathological chemistry (fee 5*l.*). It is unnecessary to speak at this date of the other degrees which are also granted after examination in other subjects, or for greater proficiency in several of the subjects which have been named.

Cambridge University.—The degrees of this University are highly valued. We shall only speak of the Bachelorate degree in medicine, which carries with it, in virtue of the fact that the examination includes surgery, the B.S. degree. Candidates must be graduates in arts of the University, or pass the Previous examination. Five years of medical study are required, three or four of which must be spent in Cambridge; but as the school is now complete the whole course is generally spent there. The subjects are similar to those of the London University, and there are three examinations: the first at the end of the course of lectures and manipulations in chemistry; the second after the instruction in anatomy and physiology, and pharmaceutical chemistry; and the third may be taken in two parts—viz., (1) principles and practice of surgery (with operative and clinical surgery) and midwifery and diseases of women, and (2) pathology, principles and practice of medicine, elements of hygiene, and medical jurisprudence. An abstract of the regulations and schedules of the range of the examinations in chemistry,

physics, biology, and pharmacy may be obtained, together with a list of the schools and hospitals recognised by the University, upon sending a stamped directed envelope to the Assistant Registrar, Cambridge.

Oxford University.—It takes about seven years to obtain the medical degree of this University, because students have first to graduate as B.A. The medical school is a young one, and is attended by about thirty students. There are three examinations—a Preliminary, and first and second professional.

Durham University.—Candidates for the medical degrees of this University study at the College of Medicine, Newcastle-on-Tyne, for at least one year, but the rest of the term of forty-five months may be spent at any recognised medical school or hospital. They must pass a Preliminary examination in arts, the subjects being Greek, Euclid, and two of the following:—(1) Latin, (2) French, (3) German, (4) mechanics, hydrostatics, and pneumatics, and (5) English history. They must also pass the examination for registration, which comprises at least three subjects—English, geography, and arithmetic. A degree in arts is accepted in lieu of the Preliminary, also a certificate of having passed the Preliminary professional examination for graduation in medicine at one of the following universities, viz.:—Cambridge, London, Edinburgh, Glasgow, St. Andrew's, Aberdeen, Queen's University (Ireland), Victoria (Manchester), and Royal (Ireland), provided the candidate has passed in Greek; if not he may offer himself for examination in that subject alone at Durham. Application should be made to Mr. A. Beanlands, the University, Durham. The subjects of the first examination for M.B. are—elementary anatomy, elementary physiology, chemistry with chemical physics, botany with medical botany; of the second—anatomy, physiology, materia medica with pharmacy; and of the third—medicine, surgery, midwifery and diseases of women and children, pathology, medical jurisprudence, therapeutics, public health. There is one provision made by this University which is of special interest to London students. It is:—"A candidate who has passed the first examination of the conjoint board of the Royal College of Physicians of London and the Royal College of Surgeons of England will be exempt from the first examination of the University of Durham, except in the subjects of chemistry with chemical physics, and botany with medical botany. A candidate who has passed the first and second examinations of the University will be exempt from the first and second examinations of the conjoint board in England, and will be entitled to present himself for the final examination of the board on the completion of the necessary curriculum." The B.S. degree is granted to M.B.'s who have attended one course of lectures on operative surgery, and one course on regional anatomy. They are required to perform operations on the dead body, and to give proof of practical knowledge of the use of surgical instruments and appliances. Doctorate degrees are granted to Bachelors after they have been a certain time in practice. There is an M.D. degree for practitioners of fifteen years' standing. The University also grants a licence. Particulars will be found in the College calendar.

Victoria University.—This has three teaching colleges, viz. Owens College, Manchester; University College, Liverpool; and Yorkshire College, Leeds. Four degrees in medicine and surgery are conferred, viz., M.B. and Ch.B., M.D., and Ch.M. Students, before matriculation, must pass the entrance examination in arts of the University.—Subjects:—(1) Latin; (2) elementary mathematics; (3) elementary mechanics; (4) English language, including grammar and composition; (5-6) two of the following:—(a) French; (b) German; (c) Greek; (d) mathematics (more advanced); (e) English history and elements of modern political geography. They are only exempted from this if they are graduates in arts of any university of the kingdom, or have passed—(1) the Preliminary examination of the Victoria University; (2) the matriculation examination of the University of London; (3) the Previous examination of the University of Cambridge; (4) Responsions and moderations of the University of Oxford; or (5) the leaving certificate examination of the Oxford and Cambridge Boards, provided it include Latin, English, mathematics, and mechanics. After matriculation the student must pass a year at any of the three colleges, or in a recognised medical school or

college, and pass a Preliminary examination in science, the subjects of which are chemistry, elementary biology, and physics. Subsequently he spends four years in the Leeds, Liverpool, or Manchester College, and passes two examinations in the subjects of the medical curriculum.

Scotch Universities.—Aberdeen, Edinburgh, Glasgow, and St. Andrew's are the universities which grant medical degrees. The last-named is little resorted to for that purpose.

Students must matriculate in all cases, and before they are admitted to the first professional examination they must pass a preliminary examination in arts, the subjects of which are English, Latin, arithmetic, elements of mathematics, elementary mechanics of solids and fluids, and any one of the following:—Greek, French, German, logic. Graduates in arts are exempted. The candidate for the degree of M.D. must pass in Greek and in logic or moral philosophy, and in one of the following subjects, viz.:—French, German, higher mathematics, natural philosophy, and natural history. The examinations recognised by the General Medical Council are also recognised *pro tanto* by the Scotch universities. The curriculum is very similar to that of the Durham University. One of the four years of study must be spent at the University granting the degree sought. Another year must be either in the same university, or in some other university entitled to give the degree of Doctor of Medicine. Of the other two years, one may be constituted by attendance during at least six winter months on the medical or surgical practice of a general hospital which accommodates at least eighty patients, and, during the same period on a course of practical anatomy; and one year's attendance, to the extent of four of the departments of medical study required, on the lecturers or teachers of medicine in the hospital schools of London, or in the school of the College of Surgeons in Dublin, or of such teachers of medicine as shall be recognised by the University Court, may be reckoned as one of the four years. Full particulars will be found in the calendars of the universities. It will be understood that each university is an independent body, and each has its own system of examination, although the subjects of all are practically the same.

Irish Universities.—Dublin (Trinity College). Candidates must be graduates in arts. They matriculate, pass a "Previous" examination in physics, chemistry, botany, comparative anatomy, descriptive anatomy, and institutes of medicine (practical histology and physiology); then study medicine for four years, and pass the necessary examinations. The following are the degrees which are granted:—M.B., M.D., B.S., M.S., B.O.S., and M.O.S. The Royal University confers similar degrees upon persons of either sex. The conditions are similar.

MEDICAL DIPLOMAS.

Next to a degree a diploma is the best thing a medical student can have. Again, taking London as the starting-point, we notice first

THE L.S.A.

This is a diploma which very few London students do not attempt to get. It is an old licence—so old and so commonly taken that there was an attempt a few years ago to do away with it, but, thanks to the General Medical Council, it survives. Candidates are required to pass an examination in arts, the subjects being the same as are set forth on page 414. The examinations are held in the Hall of the Society, Blackfriars, E.C., on the first Fridays and Saturdays in March, June, September, and December. The subjects may be taken together or separately, and as no subject is required to be taken up again in which a candidate has passed before any examining body recognised by the Medical Council, it follows that chemists and druggists are exempted from English, Latin, arithmetic, and chemistry, and may enter the Hall for the other subjects. The fee is 1*l.* 1*s.*

The qualifying examination is divided into two, primary and final. The primary, held quarterly in the first week of January, April, July, and October, consists of two parts, which may be taken together or separately. Part I. This may be passed at any period after registration as medical student. Subjects:—Chemistry and chemical physics; practical chemistry; materia medica, including the botany of the Pharmacopœia, and pharmacy and prescriptions. Part II. cannot be passed before the completion of twelve months' practical anatomy, with demonstrations; subjects:—anatomy, physiology, and histology.

Candidates are excused any or all of these subjects on producing evidence that they have passed equivalent examinations before any examining body recognised by the Medical Council. The final (held monthly), from which there is no exemption, and which cannot be passed before the expiration of forty-five months from registration as a medical student, embraces the following subjects, and consists of two parts, either of which may be taken first:—Part I.—Principles and practice of surgery; surgical pathology; surgical anatomy and operative manipulation, and surgical instruments and appliances; an examination of surgical cases. Part II.—(a) Principles and practice of medicine, including therapeutics, pathology and morbid histology, an examination of medical cases; (b) forensic, medicine, toxicology, hygiene, and insanity; (c) obstetric medicine, including gynaecology, obstetric instruments and appliances.

Candidates must give fourteen days' notice, and pay at the same time the fee for the examinations, 10*l.* 10*s.*; 4*l.* 4*s.* of which must be paid on entering for the primary.

ENGLISH DOUBLE QUALIFICATION.

The membership diploma of the Royal College of Surgeons was long held to be one of the most important available to London medical students. Owing to the new Medical Act, the diploma is no longer granted singly, except to those who commenced their studies before October 1, 1884, as the college and the Royal College of Physicians have combined to grant a double qualification, which entitles the holder to complete registration as a practitioner. This examination is held at the Examination Hall, Victoria Embankment, W.C., and those who pass it may place the letters L.R.C.P. and M.R.C.S. behind their names. Full particulars regarding the examination may be obtained from Mr. F. G. Hallett, the secretary. The conditions of entrance are almost identical with the recommendations of the General Medical Council. Candidates must be registered as medical students when commencing the required forty-five months' study; they must produce evidence of having received instruction in chemistry, materia medica, and pharmacy, and as having attended lectures and demonstrations in the other subjects. There are three examinations; the first in chemistry, chemical physics, materia medica, pharmacy, elementary anatomy, and elementary physiology. This examination may be taken in three parts, at different times. Candidates are admitted to the examination on chemistry and chemical physics, materia medica, and pharmacy, on producing evidence of having been registered as a medical student by the General Medical Council, and of having received instruction in chemistry, materia medica, and pharmacy; or they may take materia medica and pharmacy as part of the second examination. This enables those who have been in pharmacy, and have attended the courses of one or other of the Metropolitan schools of pharmacy, to proceed to the examination in chemistry, &c., as soon as they enter upon their studies. The second examination is in anatomy and physiology, and can only be entered at the end of eighteen months of study. The subjects of the final examination are:—(1) Medicine, including therapeutics, medical anatomy, and pathology; (2) surgery, including surgical anatomy and pathology; (3) midwifery and diseases peculiar to women. The subjects may be taken separately, and at the end of the curriculum. The fees amount to 36*l.* 15*s.*, and the examinations are held in the months of January, April, June, and October.

L.R.C.P.

Medical students may proceed for this licence alone, it being a qualification to practise medicine, surgery, and midwifery, and recognised by the Local Government Board as a qualification in surgery as well as in medicine. The preliminary conditions are the same as those for the double qualification, and there are three examinations: the first (fee 5*l.* 5*s.*), in chemistry, materia medica, and pharmacy, and osteology may be passed at the commencement of professional studies; the second (fee 5*l.* 5*s.*) and the third (fee 5*l.* 5*s.*) are similar to those for the double qualification.

SCOTCH TRIPLE QUALIFICATION.

The Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Faculty of Physicians and Surgeons of Glasgow have made arrangements by which, after one series of examinations, held in

Edinburgh and Glasgow, the student may obtain the diplomas of the three co-operating bodies. The three bodies grant their single qualifications only to candidates who already possess another and opposite qualification in medicine or surgery, as the case may be. Thus, the Royal College of Physicians of Edinburgh grants its licence to candidates who hold a recognised British, Irish, Indian, or Colonial qualification in surgery. The Educational Institute of Scotland conducts a preliminary examination in arts for the bodies, but the certificates recognised by the General Medical Council are also recognised in this case. There are three professional examinations. The first, at the end of one year's study, is in chemistry, elementary anatomy, and histology (fee 5*l.* 5*s.*). The second (may be taken at the end of the summer session in the second year) embraces anatomy, physiology, materia medica, and pharmacy (fee 5*l.* 5*s.*). The Final examination embraces the principles and practice of medicine (including therapeutics, medical anatomy and pathology), clinical medicine, the principles and practice of surgery (including surgical anatomy and surgical pathology), clinical surgery, midwifery and gynaecology, medical jurisprudence, and hygiene, and does not take place before the termination of the full period of study (fee 15*l.* 15*s.*). Candidates when entering for the examination held in Edinburgh must produce their certificates to the inspector, Mr. James Robertson, solicitor, 1 George Square, Edinburgh, or when entering for the examination held in Glasgow, to Mr. Alexander Duncan, B.A., Faculty Hall, 242 St. Vincent Street, Glasgow, from either of whom further particulars may be obtained. We may add that any graduate in medicine and surgery of a British or Irish university, and any graduate or licentiate in medicine and surgery of certain universities and colleges, who has passed examinations comprising the subjects of the first and second examinations of the board, and has completed four years' study in all the subjects of the curriculum, is admitted to the final examination on payment of a fee of 26*l.* 5*s.*, 20*l.* of which is returned to unsuccessful candidates.

IRISH DOUBLE QUALIFICATIONS.

The King and Queen's College of Physicians and the Royal College of Surgeons in Ireland conjointly examine candidates for their double diploma. The preliminary conditions and the periods at which the professional examinations may be entered during the curriculum are the same as for the Scotch triple. An apprenticeship of three years with a pharmaceutical chemist exempts candidates from a course of practical pharmacy in a medical school. The subjects of the first examination (fee, 15*l.* 15*s.*) are chemistry, anatomy, and pharmacy; of the second (fee, 10*l.* 10*s.*), anatomy, histology, hospital practice, physiology, and materia medica; of the third (fee, 9*l.* 9*s.*), anatomy (surgical), surgery, medicine, and physiology; and of the final (fee, 6*l.* 6*s.*), medicine, surgery, therapeutics, pathology, midwifery and diseases peculiar to women, forensic medicine in reference to medicine, surgery, and midwifery, hygiene, and ophthalmic and aural surgery. There are certain exemptions to parts of the examination. For instance, the M.B. examination, Royal University of Ireland, and the second examination, English Conjoint Examining Board, exempt from the first, second, and third examinations of this conjoint scheme. None of the best qualifications in the kingdom are ignored; so that it is not a difficult matter for those who wish to place a little army of letters behind their names to secure this double qualification. For the complete list of recognised exemptions, and for other information, apply to Mr. Greenwood Pim, M.A., secretary of the committee of management, 47 Dawson Street, Dublin.

The Royal College of Surgeons (Ireland) and the Apothecaries' Hall of Ireland also grant their diplomas conjointly. There are four examinations similar to those of the last-mentioned bodies, but differing in several details. The fees amount to 34*l.* 13*s.* There are also exemptions from parts of the examinations. Training in practical pharmacy, under a pharmaceutical chemist, is not recognised. The Royal College of Surgeons continues to grant its own diploma, and also conducts a primary examination in general education. Particulars of these may be obtained from the Registrar of the College, Stephen's Green, Dublin.

WHERE TO GET MEDICAL EDUCATION.

The following is a list of the medical schools and universities in the kingdom whose courses of instruction are

recognised by the various qualifying bodies. They are arranged alphabetically, according to the names of the towns, London being placed last. The fees given are for the complete curriculum required by the General Medical Council, including hospital practice. The Cambridge and Oxford medical schools are not included here.

PROVINCIAL.

ABERDEEN.—*University.*—Winter session begins October 15, 1889; summer session, April 21, 1890; fees, 60*l.* to 80*l.* Secretary, Mr. A. Stewart.

BELFAST.—*Queen's College.*—Lectures in medicine commence on October 29. The summer medical classes commence on May 1, 1890, except botany, which begins on April 1. Registrar, Dr. John Purser.

BIRMINGHAM.—*The Queen's College.*—Winter session commences on October 1, and the summer session on May 1. Fees, 105*l.* Hon. sec., Prof. Windle, M.D.

BRISTOL.—*Medical School,* affiliated to Bristol University College.—Winter session begins October 1, and the summer session, May 1; fees, 99*l.* 15*s.* Dean of the Faculty, Dr. A. B. Prowse.

CORK.—*Queen's College.*—Three terms, beginning October 15, 1889, January 6, and April 14, 1890; fees, about 68*l.* Registrar, Mr. Alexander Jack, M.A.

DUBLIN.—*Carmichael College of Medicine and Surgery, Aungier Street.*—Fees, 58*l.* 5*s.* 6*d.*

School of Medicine, Catholic University, Cecilia Street, Dame Street.—Winter session begins November 3; summer session first week of April; fees (without hospital practice), about 46*l.* Registrar, Professor Birmingham.

School of Physic of the University.—Winter session begins October 1, and the summer session April 1; fees, 111*l.* 16*s.* 6*d.* Registrar, Mr. H. W. Macintosh, M.A., Trinity College.

DUNDEE.—*University College.*—Part only of the curriculum can be taken here.

EDINBURGH.—*School of Medicine.*—Sessions commence on October 15 and May 1. Fees for the course required for Scotch triple qualification, about 70*l.* Secretary, Dr. Stevenson Macadam, Surgeons' Hall, Nicolson Street.

University Medical School.—Fees for M.B., C.M., about 115*l.*, including graduation fees. Dean of the Medical Faculty, Professor T. R. Fraser.

GALWAY.—*Queen's College.*—Terms commence October 15, January 7, and April 14. For fees apply to the Bursar, Dr. G. J. Allman, F.R.S.

GLASGOW.—*University, Faculty of Medicine.*—Sessions commence October 22 and May 1; fees, about 100*l.*, including graduation fees. Assistant clerk, Mr. W. Innes Addison.

Anderson's College Medical School, Dumbarton Road.—Sessions commence October 22 and May 1; fees (lectures and hospital) for conjoint qualifications, about 48*l.* Dean of the Medical Faculty, Professor A. M. Buchanan, 98 Saint George's Road, Glasgow.

St. Mungo's College and Glasgow Royal Infirmary.—This is a newly incorporated college, whereat education in legal and scientific, as well as medical, subjects may be obtained. Fees, 60*l.* 18*s.* for triple medical qualification. Mr. Henry Lamond, 93 West Regent Street, Glasgow, secretary of the College.

LEEDS.—*Yorkshire College.*—Sessions begin October 1 and May 1; fees, 105*l.*; Dean of Medical Department, Mr. Scattergood, 41 Park Square, Leeds.

LIVERPOOL.—*University College.*—Sessions and fees as at Leeds. Dean of the Medical Faculty, Mr. Paul, 38 Rodney Street, Liverpool.

MANCHESTER.—*The Owens College.*—Sessions and fees same as Leeds. Registrar, Mr. M. W. Holder, M.A.

NEWCASTLE-ON-TYNE.—*University of Durham College of Medicine.*—Fees, about 93*l.*

SHEFFIELD.—*School of Medicine, Leopold Street.* Sessions same as Leeds; fees, about 82*l.*

METROPOLITAN.

The fees quoted in the following instances are for the curriculum and hospital instruction required for the double

qualification in medicine and surgery. The course in preliminary science is not included. The sessions begin in the first weeks of October and May.

CHARING CROSS HOSPITAL.—Fees, 94*l.* 10*s.*, or 105*l.* in instalments. Secretary, Mr. J. F. Pink, 62 Chandos Street, W.C.

GUY'S HOSPITAL.—Fees, 131*l.* 5*s.*, or 137*l.* 10*s.* in instalments. Dean, Dr. Perry, the Hospital, St. Thomas's Street, Borough, S.E.

KING'S COLLEGE, Strand, W.C.—Fees, 126*l.* 11*s.* 6*d.*, or 138*l.* in instalments. Secretary, Mr. J. W. Cunningham.

LONDON HOSPITAL, Mile End, E.—Fees, 94*l.* 10*s.*, or 105*l.* in instalments. Warden, Mr. Munro Scott.

LONDON SCHOOL OF MEDICINE FOR WOMEN, 30 Handel Street, Brunswick Square, W.C.—Fees (exclusive of pharmacy and two other subjects), 105*l.*, or 115*l.* in instalments. Secretary, Miss Heaton.

MIDDLESEX HOSPITAL MEDICAL SCHOOL, Cleveland Street, W.—Fees, 100*l.*, or 110*l.* in instalments. Warden, Mr. L. Hudson, F.R.C.S.

ST. BARTHOLOMEW'S HOSPITAL, West Smithfield, E.C.—Fees, 131*l.* 5*s.*, or 138*l.* 12*s.* in instalments. Warden, Dr. Norman Moore.

ST. GEORGE'S HOSPITAL, Hyde Park Corner, S.W.—Fees, 125*l.*, or 130*l.* by instalments. Dean, Dr. T. Whipple.

ST. MARY'S HOSPITAL, Cambridge Place, Paddington, W.—Fees, 120*l.*, or 125*l.* in instalments. Dean, Mr. H. W. Page, M.A.

ST. THOMAS'S HOSPITAL, Albert Embankment, S.E.—Fees, 131*l.* 5*s.*, or 145*l.* in instalments. Medical Secretary, Mr. G. Kendle, at the Hospital.

UNIVERSITY COLLEGE, Gower Street, W.C.—Fees, 126*l.*, or 131*l.* 5*s.* in instalments. Dean, Professor J. Williams.

WESTMINSTER HOSPITAL, Caxton Street, S.W.—Fees, 105*l.*, or 120*l.* in instalments. Dean, Dr. Donkin.

WHAT IT COSTS TO BECOME A MEDICAL PRACTITIONER.

It will be noticed that between the lowest and highest fees charged by medical schools for tuition and hospital practice there is a wide range. It is possible to be medically educated for about 50*l.*, that being the charge made by Anderson's College; but we prefer to put down double that sum as the cost of fees and hospital practice. To that must be added the expenses for practical work, instruments, and apparatus, for which 5*l.* per year is a likely sum. Money should never be grudged for books; they are the best friends which a student can have; and, if carefully selected, will never betray him. Amongst those which the *Lancet* recommends are:—In Anatomy, Gray's "Text-book"; Osteology, the works by Ward, Holden, and Norton. In Physiology, Huxley's "Elementary Text-book" first. In Chemistry, Roscoe and Atfield. In Chemical Physics, Fownes's "Inorganic Chemistry," or Balfour Stewart's "Elementary Physics." In Materia Medica, the works of Mitchell Bruce, Whitla, Roberts, Garrod, Lauder Brunton, or Owen. For more advanced anatomy, study Gray, Ellis's "Demonstrations," and Heath's "Practical Anatomy." In Physiology, the books most to be recommended are Kirkes's "Handbook," Yeo's "Text-book," H. Power's "Elements," and Mapother's "Manual"; and Histology, apart from the sections devoted to it in the works of Gray and Kirkes, may be studied in Klein's "Elements" and Schafer's "Essentials." For surgery and surgical anatomy there are the text-books of Bryant, Holmes, Gant, and Erichsen; the "System of Surgery," edited by Treves; the practical manuals of Berkeley Hill, Christopher Heath, Pearce Gould; and Treves's "Applied Surgical Anatomy." For surgical pathology, Pepper, Bowlby, or Billroth may be recommended. In diseases of the eye, Lawson or Nettleship. In medicine, the text-books of Roberts and Bristowe, preceded by the smaller works of Carter or Charteris. Clinical medicine—Fenwick, Finlayson, or Graham Brown. Gee's "Auscultation and Percussion" and V. Harris's "Diseases of the Chest" are most valuable guides to physical diagnosis. Pathology—Green (edited by Stanley Boyd), Coats, Payne, and Ziegler (Macalister's translation), and Woodhead's or Steven's practical work. Therapeutics—

Bartholow, Ringer, Napheys, and Farquharson. Medical Jurisprudence—the text-books of Guy and Taylor. Public Health—Wilson. Midwifery—Playfair or Galabin, and Hart and Barbour. 25*l.* for books is not too much to spend, so that with examination fees the cost of the curriculum is not likely to amount to less than 170*l.*, while the cost of maintenance during four years, if the student does not reside at home, cannot be less than 200*l.* or 300*l.*, according to the tastes and habits of the individual. It is, of course, possible that the student may aid himself materially by competing for and securing scholarships and bursaries, which all schools offer. Indeed, we have known young men who have, after the first session, maintained themselves by this means, or by assisting practitioners in their spare hours and during vacations. For smart chemists' assistants it is especially easy to become "doctors," and none who desire to advance in this direction would we attempt to discourage on the question of cost.

MEDICAL NOTES.

M.D. Brussels.—For this degree residence at Brussels is not necessary, and it is conferred on any practitioner, native or foreign, provided with proper medical and surgical qualifications, who has gone through a full curriculum, and who can pass a certain examination or series of examinations. The first examination is in therapeutics, pathology, and anatomy; the second, in surgery, midwifery, hygiene, and medical jurisprudence; and the third is a practical examination at the hospital, including some operative work. The whole of the examinations may be got through in a week. Most of the examiners understand English, and some of them speak it fluently; but Dr. L. Wharnot, the interpreter, has the bumpy knack of putting candidates quite at their ease when his services are required, so that there is no necessity for the candidate to understand French. Anyone wishing to do so can take out a course of operative surgery in Brussels some days before the examination for a fee of about 3 or 4 guineas. The fees for the examination amount in all to 540*f.* (21*l.* 12*s.*).

Homœopathy.—It is worth the while of those who are sufficiently liberal-minded to inquire into the truth of this system of medical practice. For that purpose the London Homœopathic Hospital, Great Ormond Street, Bloomsbury, provides a course of lectures on homœopathic practice, intended for qualified medical men as well as students. Composition fee for the entire course, 10*l.* 10*s.*

National Medical Service.—Appointments in the Navy, Army, and Indian Medical Services are open to registered medical practitioners, not over 28 years of age, who pass a satisfactory examination in anatomy and physiology, surgery, medicine, and chemistry and pharmacy. When there are vacancies the departments advertise the fact, and candidates having given notice are told where they will be examined. In addition to the subjects mentioned, others, such as zoology, botany, and French, may be taken in order to add to the number of marks. Candidates who pass are required to attend a course of instruction in the Medical School at Netley, and to pass a satisfactory examination at the end thereof. During residence at Netley each person receives 5*s.* per day with, or 7*s.* per day without, quarters. In the Navy pay begins at the rate of 209*l.* 17*s.* 6*d.* a year, and may increase to 602*l.* 5*s.* at the end of twenty years' service, promotion having been regularly gained. The Inspector-General's pay is 1,003*l.* 15*s.* In the army a surgeon on probation receives 8*s.* a day, surgeon 200*l.* a year, and 250*l.* after five years' service. Pay increases according to rank, the maximum being 1,300*l.* a year, which is the salary of a surgeon-general. The pensions are good; they, indeed, are the principal inducement for entering the army. For example, a surgeon, after ten years' service, receives 1,250*l.* in one sum if he retires. In the Indian Medical Service the pay is higher and pensions better: thus, a surgeon-major at the end of twenty years' service receives a pension of 365*l.* a year. Pay begins at 286*rs.* 10*a.* per month for a surgeon.

SCIENTIFIC.

THE practice of science is an ever-increasing factor in modern industry, and although British capitalists and manufacturers are somewhat slow to acknowledge that science

can control the quality of products, or even increase profits by utilising to the utmost the materials employed, still in certain departments of industry, more particularly those which have a direct relation to chemical science, the value of exact knowledge is admitted, and there is a demand—limited, it may be, but still a demand—for well-trained chemists. For this reason the present article will be directed to show

HOW TO BECOME A PROFESSIONAL CHEMIST.

The term "professional chemist" is sometimes reserved for those who practise as analysts, "technical chemist" being the title given to those who are employed in some special industry. We use the former title for both, so as to distinguish them from the popular chemist or pharmacist. There is no law restricting the practice of chemistry as a profession, but success depends greatly upon the certificates of qualification which the individual holds. In the near future we believe that the certificates of

THE INSTITUTE OF CHEMISTRY

will have universal recognition. For some years this incorporated body opened its doors somewhat widely, so that many became Associates and Fellows who had not given evidence that they possessed the qualifications which the institute demanded; but this no longer being the case, the titles will every year become more valuable, and the associateship may in course of time be a better certificate to the chemist than a science degree. For this title (A.I.C.) candidates must be 21 years old, and pass through a systematic course of at least three years' study in theoretical and practical chemistry, physics, and elementary mathematics, in any one of the following universities and colleges:—Aberdeen, The University; Aberystwyth, University College; Bangor, University College; Belfast, Queen's College; Birmingham, The Mason College; Bristol, University College; Cambridge, The University; Cardiff, University College; Cork, Queen's College; Dublin, Royal College of Science for Ireland, Trinity College; Dundee, University College; Edinburgh, The University; Glasgow, The University, Anderson's College; Leeds, Yorkshire College; Liverpool, University College; London, City and Guilds Institute, Central Institution; City and Guilds Institute, Finsbury Technical College; King's College, Normal School of Science, University College; Manchester, The Owens College; Newcastle-on-Tyne, The Durham College of Science; Nottingham, University College; Oxford, The University; Sheffield, Firth College; St. Andrew's, The University.

Candidates must also show that they have passed the examinations in the above subjects at their *alma mater*. In place of the three years' curriculum candidates may show that they have been engaged for four years in the practice of chemistry in the laboratory of a Fellow of the Institute, during at least two years of which time they have been entered as a student of the Institute, and have regularly attended systematic courses of instruction in the institutions named. Graduates in arts and science and certain others, are exempted from these requirements, but all must pass a practical examination in qualitative and quantitative analysis, which is held once a year in June or July, the fee being 2*l.* 2*s.* That this examination is not a trivial one may be judged from the following account of it, which we have received from Mr. W. Lloyd Williams, A.I.C., pharmaceutical chemist, who successfully underwent

THE EXAMINATION IN JULY LAST.

Having satisfied the somewhat stringent preliminaries imposed upon aspirants for the Associateship of the Institute of Chemistry, I made the necessary requisition, paid the needful fee, and was told off in due course to undergo the ordeal of the practical examination. Ten A.M. on Monday, July 15, found me with some eight others in attendance at King's College. The laboratory was lofty, extremely well lighted, and upon each bench was arranged a liberal assortment of apparatus. We were requested to take whatever bench we pleased, and having settled down to the positions we should occupy for the next four days we were eager to know the worst. We were consequently all attention when the examiner (Professor Thomson) read out the following list:—

- A. To analyse a complex powder containing 4 bases and 3 acids.
- B. To recognise the organic substance B, by practical tests.
- C. To recognise the organic substance C, by practical tests.
- D. To estimate the tin and lead in the alloy.
- E. To prepare sodio-ferric oxalate from the 50 grammes of ferrous sulphate and the oxalic acid supplied; and to determine the solubility of the compound in water.
- F. To determine the presence of nitrogen in the organic substance.
- G. To estimate the C and H in the organic compound supplied.
- H. To determine the percentage of sodium nitrite in the solution from an estimation of the nitric oxide it might be made to evolve.

We were informed that we were not bound to follow the above order, and the work might be distributed over the four days, during which the laboratory would be open, in any fashion we pleased. Access to books would be permitted, and finally every endeavour would be made to supply any special reagent that a candidate might have been in the habit of using.

Of the entire number of candidates in London, only some three were required to work through the whole programme, the others (eligible entirely or in part under the old regulations) were under the necessity of grappling with the first four items. A candidate who had sent in note-books was also permitted, did he so choose, to be examined in some quantitative work, taken at the discretion of the examiner from the candidate's own record. One examinee availed himself of this privilege, and was required to conduct an analysis of "bone-meal" in place of the estimation of the metals. The examiner recommended us to commence with (A), and having supplied each of us with a note-book and about 60 grammes of a dirty greyish-white powder in a stoppered bottle, we were speedily engaged in trying to unravel the "mystery."

From the physical appearances of the compound and its behaviour during the Preliminary examination, I was able to infer the probable presence of zinc, aluminium, a metal of the alkaline earth or a phosphate, a carbonate, a hydrate or water of crystallisation, calcium or potassium, and possibly sodium. I made a careful note of every step, its result, and my inference therefrom, after this fashion:—

Heated in a Cry tube. Steam given off . . . = { Water of crystallisation or a hydrate?
Heated strongly on charcoal. Some particles glow = { A phosphate? or a metal of the alkaline earth?
Heated with nitrate cobalt solution. Blue colour = Aluminium?

I trusted to at least gain credit for correctly describing the symptoms, even though I might not succeed in diagnosing the disease. The compound was only partly soluble in water, and only partly in hydrochloric acid; the residue I fused with a mixture of the carbonates of potassium and sodium. The aqueous solution contained sodium phosphate; the HCl solution and the alkaline fusion mixture revealed the presence of aluminium, zinc, and calcium, silica, a carbonate, and more phosphate. This agreed very closely with my inferences from the preliminary examination. I found that ammonia was evolved when the powder was heated with a solution of ammonium chloride, and suggested that the zinc was present as hydrate-carbonate. The separation of the aluminium, zinc, phosphate, silicate, and calcium was very troublesome. I followed the process recommended by Valentin. The silica was easily confirmed by heating some of the powder with calcium fluoride and sulphuric acid and passing the gas into water. I believe each candidate spent the whole of the first day with (A).

The note-books were collected each evening, and were redistributed the following morning.

First thing on Tuesday I inquired for (B) and (C). The former consisted of about 8 grammes of a white substance in small scales; the latter of about 4 grammes of a white somewhat granular body. I commenced operations with (B), and a very few minutes sufficed to convince me that it contained urea. Its behaviour, however, was not that of pure urea: hence I continued my researches, to find presently that the nitric radical was present; consequently I had no hesitation in declaring (B) to be nitrate of urea, though I had not previously had the pleasure of making the acquaintance of that compound.

Nor was I less fortunate with (C), my first experiment—heating in a tube—giving me a hint that it was possibly a cinchona alkaloid. My next step was in the direction of

confirming this suspicion, with a result that was fully satisfactory—it was quinine. Having settled this point, I next sought to discover in what manner it was combined.

I got a precipitate indicative of the presence of sulphate, but the appearance of the substance was not that of quinine sulphate—it looked more like phosphate or salicylate; but the test for each of these gave negative results. I had observed that the aqueous solution was slightly alkaline; I now proceeded to dissolve a portion of the sample in boiling water, cooled and filtered the solution. Upon cautiously adding to this solution dilute nitric acid drop by drop, I found that several drops were required to neutralise the alkalinity. I therefore concluded that (C) was presumably pure quinine, and added a note to account for the presence of the sulphate.

There now remained only the quantitative work, for which two-and-a-half days were available. I consequently had no occasion to distress myself, and made it my aim to get two closely concordant results. I estimated the tin as oxide, and the lead as sulphate, and made four estimations of each metal.

The composition of the alloy was about 75 per cent. lead and 25 per cent. tin, though it was not exactly in accordance with these proportions.

I did not relate working details as far as the processes were concerned, but was careful to arrange the statements and calculations in such a manner that the examiner could take them in at a glance. I had finished by 2 P.M. on Thursday, and then occupied myself by carefully revising my notes and making a brief abstract of the results.

I believe only one candidate got through the full programme, including the combustion; naturally he had to prepare his own tube, make the potash solution, and fill the bulbs.

The list of possible gaseous mixtures becomes rather formidable when one peruses the official syllabus. It would be difficult, however, to imagine a simpler case than the one recorded above.

The books bought by the candidates included Allen's "Commercial Analysis," Attfield's "Chemistry," Muter's "Chemistry," Fresenius' "Qualitative and Quantitative," and Sutton's "Volumetric Analysis."

The examination is also held, we may add, at provincial centres, such as Birmingham, Bristol, Dublin, Glasgow, and Manchester. After practising for a certain time as an analyst, Associates are admitted to the rank of Fellows. Full particulars may be obtained from the secretary, Mr. C. E. Groves, 9 Adelphi Terrace, London, W.C.

SCIENCE DEGREES.

The most highly-esteemed degrees in science are those of the University of London. For the degree of Bachelor of Science candidates are required to have passed the matriculation examination (see page 420) and the following:—

Intermediate examination in science, held annually, commencing on the third Monday in July. No candidate (except those who have obtained honours at the preceding January matriculation) is admitted to this examination within one academical year of his matriculation. Fee, 5*l*. Subjects for a pass or for honours—(1) Mathematics; (2) experimental physics; (3) inorganic chemistry; and for a pass only in—(4) general biology. Candidates may also be examined for honours in botany and zoology. The written examination is followed by a practical examination in chemistry and biology.

B.Sc. examination, held once a year, commencing on the third Monday in October, and extending over three weeks. Candidates are required to have passed the intermediate examination in science at least one year previously; and those who have been admitted to the intermediate examination in science within six months after passing the matriculation examination must have completed their eighteenth year. Fee, 5*l*. Candidates will be required to show a competent knowledge of any three which they may select out of the nine following subjects:—(1) Pure mathematics; (2) mixed mathematics; (3) experimental physics; (4) chemistry (theoretical and practical); (5) botany (theoretical and practical); (6) zoology (theoretical and practical); (7) animal physiology (theoretical and practical); (8) physical geography and geology (theoretical and practical); (9) mental and moral science.

Candidates for the degree of Doctor of Science must be B.Sc.'s of two years' standing. They pay a fee of 10*l*., and are required to submit a dissertation on some special subject which they have worked up. If this is approved candidates are subsequently examined in the branches of science which they profess. There are no conditions as to education.

Victoria University confers the degree of B.Sc. The course of study extends over three years. The first year's course leads up to the Preliminary examination, the second year's course to the Intermediate examination, and the third year's course to the Final examination. The following are the subjects of the Preliminary examination:—(1) English language and English history (including geography); (2) pure mathematics; (3, 4, 5) three of the following subjects:—Greek, Latin, French, German, elementary mechanics, elementary chemistry. If candidates can pass this examination before commencing their collegiate studies, they need only attend the lectures for two years, at either of the three affiliated colleges. The degree is obtainable in any one of five branches—mathematics, engineering, experimental, biological, and geological sciences. The total fees for the three years' curriculum amount to about 60*l*. The *University of Durham* confers the B.Sc. degree on very similar conditions, the training being obtained in the Durham College of Science, or other recognised school.

Scottish Degrees.—B.Sc. and D.Sc. are conferred by the Universities of Edinburgh, Glasgow, and St. Andrew's. Candidates must pass the Matriculation examination of the one which he decides to live at, attendance at the courses of lectures in the universities or (partly) at recognised schools being compulsory. In *Edinburgh* the period is three years. There are two examinations in the department of physical and natural science. The first in (1) mathematics; (2) natural philosophy; (3) Chemistry; (4) Zoology, including comparative anatomy; (5) Botany. The second is divided into the following groups, one of which must be professed by the candidate:—(a) the mathematical sciences: higher mathematics, natural philosophy; (b) the physical experimental sciences: experimental physics, chemistry; (c) the natural sciences: zoology, botany, physiology, geology. The degree may also be obtained in the Agricultural department.

The Glasgow degree is somewhat similar. For the *St. Andrew's* degrees candidates must go through a curriculum of three years, one of which must be spent in St. Andrew's or Dundee University College, matriculating at St. Andrew's each year. In the department of physical and natural science there are two examinations. In the first of these examinations each candidate is examined in seven subjects, namely—(1) mathematics; (2) natural philosophy; (3-5) to be chosen from among chemistry, natural history, physiology, and botany; and (6-7) from among practical physics, practical chemistry, practical zoology, practical physiology, and practical botany. At the second examination candidates are examined in higher mathematics, and natural philosophy; experimental physics, and chemistry; chemistry, and physiology; physiology, and zoology including palæontology; or zoology and botany (one subject only).

GOVERNMENT HONOURS.

Amongst the certificates available to all classes of the community, and especially to the children of persons of limited means, are those granted by the Department of Science and Art of the Committee of the Council on Education. These certificates are granted in twenty-five scientific subjects, amongst them being the physical sciences. There are six grades of certificates, elementary, advanced, and honours, first and second in each. The examinations are held in the month of May each year, and are open without payment to all who attend classes recognised by the department, while others are admitted on payment of a small fee. Pupils who show exceptional proficiency (and chemists' assistants can easily be amongst those) by passing well in a number of subjects (mathematics compulsory) are entitled to compete for the following scholarships:—

Seven Royal exhibitions, which entitle the holders to free admission to lectures and laboratories for about three years in the Normal School of Science and Royal School of Mines, London (four scholarships) or the Royal College of Science, Dublin (three scholarships), with a maintenance allowance of 50*l*. a year.

Twelve National scholarships entitling the holders to the

same educational facilities, with a maintenance allowance of 30s. a week for the session of about forty weeks each year, and third-class railway fare for one journey to and fro each session, between the home of the candidate and London or Dublin, as the case may be.

Six Free studentships entitling the holders to the same educational facilities, but not to any money allowance. Applications for the foregoing may be made up to May 31, on Form 400, to the Secretary of the Science and Art Department.

Sir Joseph Whitworth's exhibitions and scholarships are also awarded in competition at the May examinations, to those engaged in mechanical engineering only. These are of the annual value of 200*l.*, 150*l.*, and 100*l.* A prospectus regarding them (price 3*d.*) may be obtained from the Secretary to the Science and Art Department.

THE ASSOCIATESHIPS

of the Government schools are valuable honours. They are granted after successful examination in the subjects of the three years' curriculum. The associateship of the Normal School of Science is given in one or more of the following divisions:—(1) Mechanics, (2) physics, (3) chemistry, (4) biology, (5) geology, (6) agriculture; and the Associateship of the Royal School of Mines in (7) metallurgy, (8) mining.

In the first year all divisions study chemistry [16*l.*], physics [17*l.*], elements of astronomy [2*l.*], mathematics [6*l.*], and freehand drawing [2*l.*].

In the second year (A) mechanics, [10*l.*] mechanical drawing [3*l.*], elementary geology and mineralogy [12*l.*]; (B.) elementary biology [17*l.*], elementary geology and mineralogy [12*l.*]. A. being for students who take the Associateship in divisions 1, 2, 3, 7, or 8; and B. for those who take the Associateship in divisions 4, 5, 6.

In the third year each division has its own instruction; for example, 3 has chemistry alone [32*l.*], and 4 zoology and botany [48*l.*].

The figures in parentheses represent the class fees charged to paying students who are admitted to the schools.

The Royal College of Science, Stephen's Green, Dublin, also grants a diploma of Associateship. Students pass an entrance examination in mathematics and geometry, if they do not hold certificates of proficiency in these subjects. There are three divisions in which students may qualify for the diploma—viz. A. mining, B. engineering, and C. manufactures. For the last the first year's work is in pure and elementary mechanics, physics (theoretical), descriptive geometry, geometrical drawing, and chemistry (theoretical).

The second year's is in drawing, mineralogy, pure mathematics and exercises, physics (practical), chemistry (practical), general mechanics, and exercises, elementary botany, practical botany, elementary zoology, and practical zoology; the third year's being in mechanism and thermodynamics, applied chemistry and analytical chemistry. The total fees amount to 50*l.*

THE CITY AND GUILDS OF LONDON INSTITUTE FOR THE ADVANCEMENT OF TECHNICAL EDUCATION.

This organisation has three schools: the Central Institution, Exhibition Road, S.W.; Technical College, Finsbury, Leonard Street, City Road, E.C., and the South London Technical Art School, 122 Kennington Park Road. The last-named is solely devoted to modelling, design, wood-engraving, china-painting, life classes, art-metal work, house decoration, and upholstery cutting. At the Central Institution there are four departments: (1) Mechanics and mathematics; (2) engineering; (3) physical, and (4) chemical. Candidates must pass a searching matriculation examination before admission. The subjects are mathematics and mechanics, mechanical drawing, physics, chemistry, and French or German. The institution grants the diploma of Chemical Engineer to those who pass this examination and follow a three years' course of instruction, the work being distributed as follows:—

First year: Mathematics, eight hours per week; physics, seven; chemistry, seven; engineering, six; language, two.

Second year: Engineering, ten hours per week; mathematics, five; chemistry, twelve; physics, three.

Third year: Mathematics, four hours per week, and the remainder of the time to the work of the special department.

The fees are 25*l.* per annum, payable in advance.

The operations of the Technical College, Finsbury, are divided into two distinct portions: Day classes, for those who are able to devote one, two, or three years to systematic technical education; evening classes, for those who are engaged as apprentices, improvers, and foremen in industrial or commercial occupations in the daytime. Amongst the industries to which the present courses of instruction at the college specially apply are: Mechanical engineering, electrical engineering and instrument-making, manufacturing chemistry, and industries involving the application of chemistry. Classes in these departments are held in the daytime and in the evening. The work of the session begins on October 8. Candidates must be at least 14 years of age, and must, before admission, pass an elementary examination in mathematics and give evidence of a fair knowledge of English. A complete course of instruction in the department of applied chemistry extends over three years, but if the student is sufficiently advanced on admission, he may, at the end of two years, compete in the final examination for the certificate of the college. The fees for the three years' course amount to 43*l.* The evening classes of the college are well suited for chemists' apprentices and assistants. The fees are low—6*s.* to 10*s.* per session. The following are a few of the classes which are held:—

Monday.

Organic chemistry; course E. Prof. Meldola, F.R.S., and Mr. Streatfield, F.I.C. 7 to 9 P.M.

Inorganic chemistry; course D. Mr. Evans, F.I.C. 7 to 9 P.M.

Electrical technology; advanced course. Prof. Thompson, D.Sc., and Mr. Robinson, M.E. 8 to 9 P.M.

Tuesday.

Practical mathematics. Mr. Crombie, Wh. Sch. 6 to 8 P.M.

Practical electroplating. Mr. Rousseau. 6 to 8.30 P.M.

Wednesday.

Chemical and electrical laboratory work. 6 to 9 P.M.

Electrical technology; elementary course. Prof. Thompson, D.Sc., and Mr. O'Keeffe, B.E. 8 to 9 P.M.

Thursday.

Mechanical drawing. Mr. Halliday, Wh. Sch., Mr. Lofts. 6 to 9 P.M.

Chemical laboratory. 6 to 9 P.M.

Friday.

Physical laboratory. 6 to 8 P.M.

Practical mathematics. Mr. Crombie, Wh. Sch. 6 to 8 P.M.

Practical physics. Mr. Robinson, M.E., A.M.Inst.C.E., M.I.E.E. 8 to 9 P.M.

There are a number of valuable scholarships in connection with the Institute, which also conducts a series of technological examinations throughout the country about the same time as the Science and Art Examinations, and on a similar principle. For further particulars apply at Gresham College, London, E.C., or consult the "College Programme" (6*d.*).

UNIVERSITY COLLEGE, LONDON.

In the faculty of science the subjects taught are:—Mathematics and mechanics, physics, electrical technology, chemistry, geology and mineralogy, architecture, botany, zoology and comparative anatomy, and physiology. There are numerous classes in each subject—ten in chemistry, for example—including photography. The Department of Applied Science and Technology is intended to provide for students wishing to devote themselves to engineering, architecture, applied chemistry in any of its branches, or any other manufacturing or commercial pursuit, a systematic training in the application of scientific principles to industrial purposes. As in all other departments of the college, there is an unrestricted admission of students, without previous examination, to any classes they may select. Certificates (which should be valuable to the student) are granted in this department. The cost of education may be reckoned at about 40*l.* per session. Two sessions are required for the General Certificate of Engineering. Recently Mr. Watson Smith has been appointed lecturer in applied chemistry, and will deliver three courses of lectures:—(a) Chemistry of the Alkali Trade [Tuesday, 5 to 6 P.M. Fee, 2*l.* 2*s.*]; (b) Fuel and Gas [Monday, 5 to 6 P.M. Fee, 2*l.* 2*s.*]; and (c) Coal-tar Products [Thursday and Friday, 5 to 6 P.M. Fee, 3*l.* 3*s.*]. There will also be evening lectures in applied chemistry. The session begins on October 2.

Further particulars may be obtained from the secretary of the college.

KING'S COLLEGE, LONDON.

No one is admitted to this college under 16 years of age. All must show evidence of sound education and good moral character. The scientific education is specially adapted for the degrees of the University of London. Two years' training is required for B.Sc. The fees amount to about 95*l*. Students who have pursued their studies in this department of the college for three years, and have fulfilled the required conditions, are entitled to the diploma of "Associate of King's College." The subjects taught are similar to those of University College, but there is a special department devoted to the art and scientific principles of photography, in which Professor J. M. Thomson is the lecturer. Fee, 6*l*. 5*s*. per term. Classes for evening instruction are held at King's College during the months of October to March inclusive, and during the months of April, May, and June, On Friday, October 4, an opening lecture will be given in the Large Theatre at 8 P.M., by W. H. Preece, Esq., F.R.S. The following are some of the subjects of the winter course, with the names of the professors and lecturers:—

Agriculture—F. J. Lloyd, F.C.S.
 Botany and biology (vegetable)—Professor Groves, F.L.S.
 Chemistry—G. S. Johnson, F.C.S.
 Chemistry (practical)—G. S. Johnson, F.C.S.
 Comparative anatomy and practical biology (animal)—C. J. Martin, B.Sc.
 Electricity and magnetism—E. F. Herroun, F.I.C.
 Heat, sound, and light—E. F. Herroun, F.I.C.
 Mathematics—E. Brooksmith, M.A., and G. F. Larcher, B.A.
 Mechanics—H. Tomlinson, B.A., F.R.S.
 Microscopic manipulation and detection of adulteration—Professor Groves, F.L.S., F.R.M.S., and Herbert Jackson, F.C.S., F.I.C.

For any single course, 1*l*. 11*s*. 6*d*.; practical chemistry and agriculture, 2*l*. 2*s*. each; comparative anatomy and practical biology, 5*l*. 5*s*.; microscopic manipulation, 3*l*. 3*s*. Secretary, Mr. J. W. Cunningham.

OTHER METROPOLITAN SCHOOLS.

The Polytechnic, 309 and 311 Regent Street, W.—Mr. Butler-Smith conducts classes at this institution for the medical, pharmaceutical, and other preliminary examinations. There are evening classes in all the subjects in which the Science and Art Department grant certificates. Instruction is also given in photography.

Birkbeck Literary and Scientific Institution, Bream's Buildings, Chancery Lane and Fetter Lane, E.C.—Evening classes, including lectures and practical work in organic chemistry, will be conducted during the ensuing session by Mr. F. Gossling, B.Sc., specially arranged to prepare students for the following examinations, viz., London University, intermediate M.B., second B.Sc., and Science and Art examinations. Similar classes will be conducted by Mr. G. Chaloner, F.C.S., in inorganic chemistry, and classes will be held in most subjects pertaining to science and technology. The fees are low.

PROVINCIAL INSTITUTIONS.

ABERYSTWITH.

University College of Wales is open to persons of either sex. The session begins in the third week of September, and is divided into three terms. Instruction is given in the subjects for the Arts and Science degrees of the London University, and students may spend here two of the three years required for B.Sc., Edinburgh. The fee for the whole session is 10*l*., practical work in science being extra. The style of "Associate of the University College of Wales" is conferred upon students of the college who pass three examinations, particulars of which will be found in the prospectus.

BIRMINGHAM.

Mason Science College.—This institution, though not yet in its teens, is having great influence upon education in the Midlands. The aims of the college and the subjects in which lectures and practical instruction are given are similar to

those of the London colleges. The complete courses of instruction, extending over three years, lead up to the requirements for the *Associateship* of the college. The title may be taken in either of three departments—physical, biological, or technological science. The fees for the courses of instruction vary from 15*l*. to 25*l*. per session. Students may obtain instruction for degrees at like rates.

BRISTOL.

University College.—The scientific instruction given at this college is well adapted for aspirants to the degrees of the London University. There are day classes in nearly all the subjects of modern science, the professors being men of high repute. The fees are generally 5*l*. 5*s*. per session for each subject. Evening classes are held; fees, 1*l*. per session, or thereby. The following serves to show the nature of the classes:—

Chemistry, elementary	} Arthur Richardson, Ph.D.
.. advanced	
.. applied to potting	
.. applied to soap and candles ..	
.. photographic	Professor Young, D.Sc.
	Arthur Richardson, Ph.D.

CARDIFF.

University College of South Wales and Monmouthshire.—The instruction given at this institution is adapted for the London degrees and the Science and Art examinations. It includes biology, physics, and chemistry; the last is well suited for pharmaceutical students. The fees are 10*l*. per session for the whole of the subjects, except practical work. Evening classes are held, amongst them chemistry and physics; fees, 5*s*. per term.

CORK.

Queen's College.—Lectures and practical instruction are given here in the subjects for the London science degrees; fees are low.

DUNDEE.

University College.—This young institution is affiliated to the St. Andrew's University. Amongst the subjects taught at the day classes are mathematics and natural philosophy, electrical engineering, chemistry, including dyeing, bleaching, and the chemistry of textile fabrics, as well as courses adapted to the requirements of medical and pharmaceutical students, biology and botany. The college is richly endowed, so that the fees are low. At the *Technical Institute* scientific subjects are taught in evening classes with the view of training candidates for the Science and Art examinations.

EDINBURGH.

We may commend here the Heriot-Watt College, in which evening classes are held, which are suitable for chemists' apprentices, as well as those who are preparing for science degrees.

GLASGOW.

Instruction in science is obtainable at the scientific department of Anderson's College. There are day and evening classes, the staff of professors is excellent, and the fees are low.

LEEDS.

Yorkshire College.—The instruction given in this institution is planned in accordance with the scheme of the three affiliated colleges of the Victoria University. There are evening classes. *The Leeds School of Science and Technology*, under the superintendence of Mr. J. Wertheimers, B.Sc., B.A., &c., includes lectures on botany, structural and practical; biology; chemistry, inorganic and organic, pharmaceutical and general; chemical physics; metallurgy and photography. There are day and evening classes in practical chemistry and physics. The fees are about 2*s*. 6*d*. per subject. The classes are suitable for youthful aspirants to the title of chemist and druggist.

LIVERPOOL.

University College.—Physics, chemistry, botany, and some other scientific subjects are taught at this college. The chemical laboratories are exceptionally good. There are day and evening classes, and the fees are low.

MANCHESTER.

The Owens College.—The science faculty of this college is exceptionally complete, rivalling in this respect the Government schools and other richly endowed colleges. For training in chemical and physical science the Owens College is, perhaps, second to none. The training qualifies for the Science degrees of the Victoria and London Universities. For full particulars see the calendar of the college.

NEWCASTLE-ON-TYNE.

College of Science.—The Pharmaceutical Conference met at this college last week, so that we are able to speak of the excellence of its equipment. Candidates for the Science degrees of the Durham University study here, the subjects being mathematics and mechanics, physics, chemistry, geology, natural history, French, German, and mechanical drawing. The curriculum extends over two years. *School of Science and Art*, Corporation Street.—In addition to the day classes lectures are given here, and practical instruction at the *Technical College*, Diana Street. Course VI. (fee 15s.) consists of inorganic chemistry, theoretical and practical; and one of the following: Organic chemistry, theoretical and practical; sound, light, and heat; magnetism and electricity. There are also London University matriculation classes.

NOTTINGHAM.

University College.—We have already referred under "Pharmaceutical" to some of the classes held at this college. What strikes us as the most excellent feature of the education provided is the manner in which it is apportioned to suit special purposes, such as the Whitworth scholarships, Government certificates, and science degrees. In reference to the last we may note that the college is affiliated with the Oxford and Cambridge Universities, so that the three years' curriculum of the college qualifies for the degrees of the Universities. A penny prospectus is published at the college, which contains full information.

SHEFFIELD.

Firth College.—The aim of this College is to provide for the people of Sheffield and the district the means of higher literary and scientific education by university methods of teaching. Its doors are open to all over 17 years of age. The arrangements of the college are similar to those of the Nottingham one, but in this case metallurgical subjects have special attention.

DENTAL.

By the Dentists Act of 1878 it is held that only those persons who are registered as "Dental practitioners" can call themselves "Dental Surgeon" (or an equivalent title), and recover fees for dental operations. There are three sets of persons who can or could be registered, viz.: (1) those who are licentiates in dentistry of any of the medical authorities; (2) those who hold certain foreign or colonial diplomas as dentists; and (3) those who at the passing of the Act were *bonâ fide* engaged in the practice of dentistry, either separately or in conjunction with the practice of medicine, surgery, or pharmacy. So far the only registrable foreign qualifications are Doctor of Dental Medicine of the University of Harvard, and Doctor of Dental Surgery of the University of Michigan. Persons, such as chemists and druggists, who were in practice as dentists before the passing of the Act, had the privilege of being registered on payment of a fee, but this privilege ceased early in 1880. Since then those who have been registered have had to be licentiates. This is the position at the present time; consequently this article will be directed to show

HOW TO BECOME A DENTAL PRACTITIONER.

The licensing bodies in this country are the Royal College of Surgeons, England; the Royal College of Surgeons, Edinburgh; the Royal College of Surgeons, Ireland; and the Faculty of Physicians and Surgeons, Glasgow. As the administration of the Act rests with the General Medical Council, that body regulates the conditions of study and licence, and has decreed that before commencing his pro-

fessional education the dental student must pass a preliminary examination in arts. The examination is identical with that required of medical students, and the exemptions are also the same, except that in this instance those who had commenced their dental education before July 22, 1878, are not required to pass a preliminary examination. Having fulfilled this initiatory requirement, the student should, on entering upon their medical studies, apply to the Registrar of the General Medical Council to be registered as a dental student. His professional education consists of:—(1) Apprenticeship, or instruction in mechanical dentistry, for a period of not less than three years; (2) attendance on lectures, &c., at a general hospital and medical school for one summer and two winter sessions—eighteen months; and (3) attendance at a dental hospital and school for two years.

The attendance at the general medical and at the special dental hospital and school may be carried out simultaneously and completed in two years. This plan of work really takes up the whole of the student's time, and it is impossible for him to concurrently engage in any mechanical or other employment. The following is an estimate by one who has gone through the mill of the cost of the curriculum in London, apart from the cost of living:—Pupil's premium, 63*l.*; General Hospital fees, 42*l.*; Dental Hospital fees, 25*l.* 10*s.*; dental instruments, 25*l.*; books, 10*l.*; parts for dissection, 2*l.*; subscriptions, 2*l.*; registration fees, 5*l.*; examination fees, 10*l.* 10*s.*; total, 185*l.* The nature of the studies during the two years' curriculum is determined by the subjects of the qualifying examinations, which in the case of

THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

are as follows:—Physiology, surgery, medicine, chemistry (theoretical and practical), and materia medica, anatomy (two courses and dissection), surgery and clinical surgery, dental anatomy and physiology (human and comparative), dental surgery, dental mechanics, and metallurgy. Candidates must satisfy the preliminary requirements which are referred to above, and must pass written and oral examinations, the fees for which are 10*l.*, exclusive of stamp duty for the diploma. Candidates must be of the full age of 21.

ROYAL COLLEGE OF SURGEONS, EDINBURGH.

The subjects of the examinations for this diploma and the conditions are similar to those of the London body, but in this case an examination is held at the end of the first year of the curriculum, and another at the end of the second. The first examination embraces anatomy, chemistry (with metallurgy), and physiology. Fee, 4*l.* 4*s.* The second examination embraces surgery, medicine, materia medica, and the special subjects of dental anatomy and physiology, dental surgery and pathology, and dental mechanics. Fee, 6*l.* 6*s.*

FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

Regulations, fees, and examinations are similar to those for the Edinburgh diploma. A special course of metallurgy is required, and there is an examination in practical dentistry conducted in a dental hospital.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

For the diploma of this college there are three professional examinations. The first and second are those required for the Irish double qualification; while for the third candidates are examined in—(1) Dental surgery: theoretical, clinical, and operative; (2) dental mechanics: theoretical and operative; (3) dental anatomy and physiology; (4) metallurgy and physics. The examination lasts four days, and the candidates' knowledge of operative dental surgery and mechanical dentistry is tested in a hospital and in the dental laboratory. The fees amount to 12*l.*

The foregoing are the diplomas which are open to those who are required to go through the curriculum. For a number of years it was possible for dental practitioners, who had been registered in virtue of being such before the Act passed, to obtain

DIPLOMAS *sine curriculo*;

but lately the Scotch colleges have discontinued the granting of such diplomas, and they can now be obtained only,

from the Royal College of Surgeons in Ireland. The candidate obtains from the college a schedule of application, in which he fills in the following particulars:—(1) Name, age, and address; (2) a certificate of moral and professional character, signed by two registered medical practitioners and by two registered dentists; (3) the date of commencing practice, and whether such practice has been carried on in conjunction with any other business, and, if so, with what business; (4) any certificate of general education, or degree in arts and medicine; (5) the particulars of professional education. The schedule of application, containing these particulars, must be sent to the Registrar of the college at least three weeks before the date of the examination; and the council of the college will then determine whether or not the candidate shall be admitted to examination for the Dental Diploma. Such examination shall comprise the same subjects, and be conducted in the same manner, as the Second* and Final Professional examinations. The fee for the examination is 21*l*.

WHERE TO OBTAIN DENTAL EDUCATION.

LONDON.

Dental Hospital, Leicester Square, W.—Sessions commence October 1 and May 1890. Fees for special lectures and hospital practice, 31*l*. 10*s*. Dean, Mr. Morton Smale, M.R.C.S.

National Dental Hospital and College, 149 Great Portland Street, W.—Sessions as above. Fees for dental lectures and hospital practice, 25*l*. 4*s*. Dean, Mr. F. Henri Weiss.

Guy's Hospital (Dental School).—Fees, dental subjects and practice only, 31*l*. 10*s*.; complete instruction, 70*l*. in one sum. Dean, Dr. Perry.

The following are the fees for general subjects and hospital practice at the undermentioned schools:—

Charing Cross Hospital.—42*l*. 2*s*.

London Hospital.—42*l*.

Middlesex Hospital.—42*l*.

St. Bartholomew's Hospital.—66*l*. 3*s*.

St. George's Hospital.—55*l*.

St. Mary's Hospital.—24*l*. (hospital practice only).

St. Thomas's Hospital.—55*l*.

University College.—63*l*.

Westminster Hospital.—52*l*. 10*s*.

PROVINCES.

Birmingham, School of Dentistry, Queen's College.—Fees, 63*l*. for the full curriculum. Hon. sec., Mr. J. Humphreys, L.D.S., 21 Newhall Road, Birmingham.

Dublin, Dental Hospital, 25 Lincoln Place.—Fees and curriculum are the same as exist at the London Dental Hospital. Dean, Dr. R. T. Stack, F.R.C.S., &c.

Edinburgh, Dental Hospital and School, 5 Lauriston Lane.—Fees: hospital practice and special classes, 25*l*. 10*s*.; for *all* subjects and examination fees for L.D.S. Edin., 75*l*. 12*s*. Dean, Mr. Bowman Macleod, L.D.S.

Exeter, Dental Hospital Castle Street.—Fee: 5*l*. 5*s*. for hospital practice only.

Glasgow, Dental Hospital and School, 4 Chatham Place, Stirling Road.—Fees: hospital practice and special lectures, 25*l*. 4*s*. Secretary, Mr. D. M. Alexander, 117 Wellington Street, Glasgow.

Liverpool, University College, and Dental Hospital, Mount Pleasant.—Fees: for everything, 73*l*. 10*s*. Hon. Sec., Mr. W. L. Jackson, Central Buildings, North John Street.

Manchester, Owens College, and the Victoria Dental Hospital, Grosvenor Street, All Saints.—Fees: for everything, 73*l*. 2*s*. Dean of the Hospital, Mr. H. Planck, L.D.S.I.

* Anatomy, physiology, materia medica, pharmacy, hospital practice, and dissection.

Plymouth, Dental Hospital, Octagon.—Fees: for special lectures and dental practice only, 23*l*. 2*s*. Secretary, Mr. E. G. Bennett.

FOREIGN DENTAL DEGREES.

Although the degrees of the Harvard and Michigan Universities only are registrable, there is nothing in the world to prevent a registered dentist from obtaining and using the degree of any other American University; for instance, D.D.S. of the Pennsylvania College of Dental Surgery, which costs about 50*l*., or that of Baltimore, which costs 27*l*. In both cases classes must be attended, and examinations passed in the United States. For the Harvard degree (Dentauræ Medicinæ Doctor) two years' residence at the university in Boston, Mass., is necessary. The subjects are similar to those for L.D.S., England. The bare fees amount to \$350 for the two years. Sessions begin in September. Dean of the school, Mr. T. H. Chandler, 161 Newbury Street, Boston, Mass. U.S.A. The requirements for the Michigan degree (D.D.S.) are somewhat more stringent, as students are required to attend three full courses of lectures at the University and Dental College, Ann Arbor. The fees, however, are lower. Dean: Dr. J. Taft, Ann Arbor, Mich., U.S.A. American dentistry is in some respects far in advance of what dentistry is with us, and that is the principal inducement to English students sojourning in the States for a few years.

VETERINARY.

HOW TO BECOME A VETERINARY SURGEON.

ALTHOUGH the Veterinary Surgeons Act has been in existence for eight years only, it has had an extremely beneficial influence upon the practice of medicine as related to domesticated animals. Before the Act passed anyone might assume the title "veterinary surgeon" and practise as such, but since January, 1884, a penalty of 20*l*. has been attached to the illegal use of the title. The carrying out of the Act is vested in the Royal College of Veterinary Surgeons, who appoint examiners, regulate the examinations, and institute prosecutions for infringement of the Act. Although the veterinary profession does not rank as high as the medical, it presents a few advantages over the latter; for instance, the average income is quite as good, the veterinarian can at the same time engage in trade, as many do, and there are not so many night calls as there are on medical men. The step between pharmacy and veterinary surgery is not a big one, especially if the young pharmacist has passed the Minor, the subjects of which are of great service to him. There is no condition of previous training, such as an apprenticeship, required before the student enters upon his studies, but he must pass a matriculation examination, which is practically the same at all the colleges. The following are the pass subjects of the examination at the Royal Veterinary College:—Reading, dictation, arithmetic, English history, and geography of Europe and the British Isles, English grammar, and French, German, or Latin. The Pharmaceutical Society's Preliminary examination is accepted in lieu of the above, and so also are all the examinations accepted by the General Medical Council (see page 414). The matriculation examination of one veterinary college stands for any other one.

The Royal College of Veterinary Surgeons, which is an examining body, and must not be confounded with the teaching hodies afterwards referred to, has instituted the following regulations in regard to

THE CURRICULUM AND EXAMINATIONS.

First Examination.—Before the student is admitted to this he must have completed the nineteenth year of his age, and have attended two winter and one summer terms of collegiate instruction. He will be examined on chemistry, general and practical; botany, including food, poisonous and medicinal plants; and on elementary anatomy.

Second Examination.—The student must have completed his twentieth year, and have attended lectures and demonstrations in anatomy, histology, and physiology for two full terms after passing his first examination. He must also have

carefully dissected as many subjects as are required by the regulations of the dissecting-room. On presenting himself the student will be examined on the anatomy of the horse and other domesticated animals, and on histology and physiology.

Third Examination.—Before entering for this, the final examination, the student must be 21 years, and have attended lectures, demonstrations, and instruction on therapeutics, materia medica and toxicology, morbid anatomy, pathology, and the principles and practice of veterinary medicine and surgery, for three terms subsequently to passing his second examination. He must also show his ability to examine a horse for soundness, to write a certificate thereon, to write prescriptions and to dispense medicines, also to take off and put on a shoe and search a foot for its diseases. This examination is oral and practical, and if the student fails in the latter he is not required to appear for the oral again provided he pass the practical within three years. The subjects of the examination are morbid anatomy and pathology, therapeutics, materia medica and toxicology, veterinary medicine and surgery; also the causes, ordinary, special, and parasitic, symptoms, and treatment of diseases in general affecting the horse and other domesticated animals. The student will likewise be examined on the principles of shoeing, &c., as already mentioned.

The student who is successful in these examinations receives his diploma as a M.R.C.V.S. There is a still higher one, the fellowship, which he may enter for after being in practice for five years. The examination for this diploma is carried on by a "special court," which consists of not fewer than three members. It is both oral and written. The subjects are physiology and comparative anatomy, pathology, therapeutics, surgery, sanitary science, dietetics, and epizootiology.

The fees payable are:—First examination, 4*l.* 4*s.*; second, 4*l.* 4*s.*; final, 4*l.* 4*s.* And on passing the last examination, a sum of 1*l.* 1*s.* for registration; altogether, 13*l.* 13*s.*

Further particulars regarding these examinations may be obtained from the Secretary, Royal College of Veterinary Surgeons, 10 Red Lion Square, London, W.C.

WHERE TO GET VETERINARY EDUCATION.

There are no veterinary colleges in Ireland, but Great Britain has four, particulars of which we subjoin:—

ROYAL VETERINARY COLLEGE,

Camden Town, London, N.W.

Founded 1791. Principal, G. T. Brown, C.B., assisted by eight professors and assistants. The entrance fee of 47*l.* 5*s.* may be paid in three instalments, viz., 26*l.* 5*s.* on entry, 10*l.* 10*s.* at the end of the first, and 10*l.* 10*s.* at the end of the second, period of study. The matriculation examination will be held at the college on September 25 and 26. The session begins in the first week of October. Secretary, Mr. R. A. N. Powys.

ROYAL (DICK'S) VETERINARY COLLEGE,

Clyde Street, Edinburgh.

An endowed college founded by the late Professor Dick in 1823. Principal, Thomas Walley, M.R.C.V.S., and nine professors and assistants. The matriculation examination is conducted at the college by the Educational Institute of Scotland; October 1, 1889, and January 8, 1890, are the next dates. The session will begin October 2. Total fees 43*l.* 1*s.*, payable in three portions, as above. Inquirers are requested to address the principal.

THE NEW VETERINARY COLLEGE,

Leith Walk, Edinburgh.

Principal, Professor Williams, F.R.S.E., who has nine associate teachers. The session begins on October 2, and the matriculation examination is conducted the day after. Total fees, 47*l.* 5*s.*, payable in three parts.

GLASGOW VETERINARY COLLEGE,

Buccleuch Street, Garnethill.

Incorporated 1863. Principal, J. McCall, F.R.C.V.S., with five professors and assistant. The next session begins October 1. Total fees, 47*l.* 5*s.*, payable in three parts.

WHAT IT COSTS.

It will be seen from the foregoing that about 60*l.* is required for fees. At least 20*l.* more will be absorbed in books and instruments, and not less than 150*l.* is required for living during the collegiate courses. The student is all the better for practice with a veterinary surgeon during the summer vacations, and if he pay a premium of 20*l.* for this privilege he will have spent 200*l.* before he gets his diploma.

WHAT MAY BE GAINED.

Each college offers medals and other prizes at the end of each session. The London College and the New Edinburgh College offer scholarships, and the R.C.V.S. offers "The Fitzwygram Prizes," value 50*l.*, 30*l.*, and 20*l.*, for competition each year amongst those who have passed the final examinations. The Army Veterinary Department is worth trying for. Candidates are required to pass an examination before a board of military veterinary surgeons, and if they pass they are appointed on probation, receiving 10*s.* per day, and on appointment they receive 250*l.* a year, remuneration rising with promotion to 850*l.*—should the lucky man become principal veterinary surgeon.

Personalities.

MR. JAMES McNIVEN has opened a second business in Falkirk.

MR. B. ROBINSON has accepted the invitation to allow himself to be nominated for the mayoralty of Salford.

MR. T. P. CLARK, of 151 High Street, Stourbridge, is retiring from business, and is succeeded by Mr. F. W. Biggs, from Penrith.

MR. S. DAMPNEY, manager of Messrs. A. S. Watson & Co.'s business at Manila, is at present visiting London, and may be addressed at 87 Abingdon Road, Kensington.

MR. WATSON SMITH, lecturer in chemical technology at Owens College, Manchester, has been appointed to fill the place of Professor Charles Graham, D.Sc., late professor of applied chemistry in University College, London.

MR. GEORGE LUNAN, pharmaceutical chemist, who for the past three years has acted as senior assistant to Messrs. J. Robertson & Co., George Street, Edinburgh, has been admitted a partner by the proprietor, Mr. Thomas Thompson.

MARRIAGES.

[*Notices of Marriages and Deaths are inserted free if sent with proper authentication.*]

LUPTON—WRIGHT.—On September 16, at St. Mary's, Nether Broughton, by the Rev. C. A. Hulbert, John Arthur Lupton, chemist, York, to Carrie, daughter of Mr. John Wright, The Grange, Nether Broughton, Melton Mowbray.

NICHOLSON—COX.—On September 10, at Hackney Parish Church, Thomas Tanner (son of the late William Hunter Nicholson, M.R.C.S., of St. Pancras), chemist, of 125 Hampstead Road, to Susan (Susie), elder daughter of Isaac Cox, Esq., of Dalston.

DEATHS.

PROCTER.—On September 12, at Beeston, Notts, Jane, wife of the late Robert Procter, chemist, Newark-on-Trent. Aged 64.

SHIRLEY.—On September 18, at his residence, 33 Talgarth Road, West Kensington, John George Shirley, pharmaceutical chemist, of Westbourne Grove, Bayswater. Aged 68.

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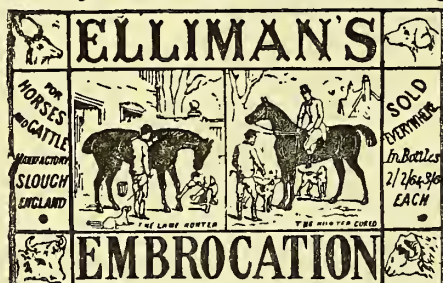
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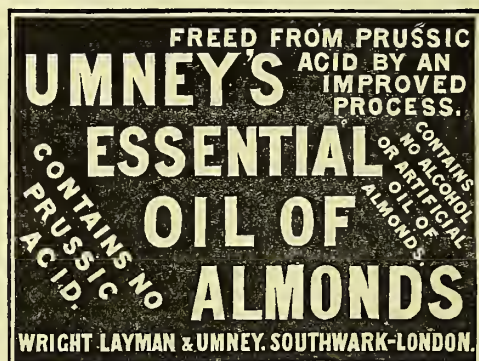
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Pages 17 and 18.

EDITORIAL NOTES.

EDUCATION.

THE making or marring of many a career commences on the first of October. That is the day on which most of the

colleges, schools, and universities are re-opened for work; it is the day of inaugural addresses, new friendships, fresh resolutions. This year it will in the broadest sense be doubly auspicious, for from that day henceforth the pupils in the Board Schools of Scotland will be exempt from the payment of fees. Free education is not a thing which we can quarrel about. We have been more than half-way towards it for some years now, and the results have been good; when we go the whole way they can only be better. One result we can foresee with some certainty, viz., that the gradual advance of the minimum of knowledge imparted to the masses must raise the maximum aimed at by the classes. The momentum conveyed to the most lowly organised atom will be transmitted to the atom of the organism which has reached the highest stage of development. Professional and technical education will, therefore, continue on the path of progress which they have occupied during the greater part of the present century.

Education in this country is in a decidedly hopeful condition. We may say this even of the specialised branches. In pharmacy we have a good supply of schools which are commercially successful, therefore well taken advantage of, and the failure to force the speed of the educational chariot by a legislative process is, in the circumstances, the providential result of needless toil. We are not yet ripe for compulsion. In medicine there are strange symptoms of unequal distribution of the raw material. The Edinburgh professor discourses to his 300 or 400 students, and the Oxford don can scarce scrape a score of undergraduates together, eminent though he has proved himself to be. Blackfriars teems with examinees when the "professionals" are on, while Burlington House is like a desert. Meanwhile the apostles of the higher education weep. But why should they? Is it not better to open the door of education wide, to give shelter to many ordinary mortals, whose faltering steps can never hinder the progress of the genius? The experience of several centuries tells us that that is the better plan. Yet some of the education enthusiasts on the technical science side are trying to outwit the centuries by forcing on us schemes of super-education in the chemical and physical sciences. We are yet young in technical education, and that is partly the reason why so few take advantage of the admirably complete curricula for this diploma and that degree. Another reason is that the commercial value of the diplomas and degrees is not commensurate with their cost. We do not quite know what to do with our accomplished young chemists when we get them. The best course to pursue in this department of education, therefore, seems to be at present to educate the laboratory assistant in the knowledge which specially pertains to the industry to which he is attached, be it alkali making, alkaloid manufacture, or dyeing.

Yet knowledge must not be estimated solely by what it will fetch in the coin of the realm. There is pleasure in gaining it, and pleasure in using it. That is the motive which the student now entering on his collegiate career must keep to the front. If examination is the immediate reason for his study he must not forget that that is only the beginning of the process which education leads up to. The knowledge gained is for the use of his fellow-men, and his own advancement depends greatly upon its thoroughness and its legitimate employment for the common good. It requires no argument at the present stage of human enlightenment to prove that education is good for all, and distasteful to few if taken in the proper manner. So far as pharmacy is concerned, it should begin with apprenticeship, taking a little science in a local class-room, a little botany in the field or garden, and much practice in the shop. So

working, the young pharmacist is ripe for a collegiate course by the time he reaches his majority, and that, we may add, is soon enough in most cases. It is at this point of his career that the information given in the present issue will be of service to the pharmaceutical student. The rest of the way he can carve out for himself, and if he bring a healthy spirit of earnestness and thoroughness to bear upon his work, he need not fear the issue.

THE BRITISH ASSOCIATION.

THE advancement of science has not been largely aided, or at least evidenced, by the latest meeting of the great organisation which charges itself with that business. We all know how impossible it is to recognise great ideas or great inventions in the germ period of their existence; and it is probable enough that some of the most obscure, some of the driest and least-regarded contributions to the recent new accumulation of records may find a place ultimately among the scientific treasures of the world's history. Be that as it may, it is certain that the more prominent features of the meeting were below the average in general interest, and that a more than usual share of the proceedings was obvious padding.

Professor Flower, the President, is the director of the national Natural History Museum at South Kensington and is recognised as the king of museum curators. For twenty-two years previous to this appointment, in 1884, he had been the director of the museum of the Royal College of Surgeons, and in connection with that institution had to deliver a course of lectures illustrating the museum annually. He is a medical man, and served as such in the Crimea during the war in 1854. His opening address was very properly a dissertation on the subject on which he is an authority, namely, on museums and the best way of arranging them, and making them useful. Such an address, though a little wearisome to listen to, was by no means one of the least useful of the series which the Association has produced, and it was wound up with some reflections of a moral tendency worth remembering by amateur scientists, and happily expressed in the quaint verse which the President quoted, and which might serve as a useful motto for every museum:—

A man who looks at glass
On it may stay his eye,
Or if he pleases through it pass
And then the heavens espy.

Sir Isaac Lowthian Bell, the president of the chemical section of the Association, made the metallurgy of iron the subject of his inaugural address. On that he is an authority, but on this occasion he had little new to tell. Captain Abney, who presided over the physical science section, discussed the science of photography in a very able manner. He estimates that there are now 25,000 persons taking photographs, and he believes that not more than 1 per cent. of these care anything about the why or the wherefore.

With Mr. Edison in Europe there was some chance of getting to Newcastle the man who has done more than any one living to utilise the investigations of scientific workers. We do not hear that Mr. Edison was even invited. The popular lions of the meeting were probably Dr. Frithiof Nansen, the Greenland explorer, and M. Paul Du Chailly, the famous African traveller of a quarter century ago, but who now came forward with a paper in which he energetically maintained the theory that the English race was descended, not from peaceful Saxons, but from the mighty Scandinavian Vikings. He does not find that the Saxons or the Franks ever had any fleets, and he does not suppose that

when the "Danes" appeared on the scene some few centuries later their fleets and their maritime prowess had sprung up suddenly. The theory was considerably wet-blanketed by the etymologists and the anthropologists who discussed it, but it took with the public. Much interest was taken in a paper by Mr. R. Sullivan on "The Resources of Siberia and the Practicability of the Northern Sea Route." The author, who was Captain Wiggins's lieutenant in his voyages to the Kara Sea, said he held that the theory of that intrepid mariner that the northern sea route was available was thoroughly sound. The failure of last year was not caused by any impediment in the Kara Sea, but solely through the grounding of the *Phœnix* in the river Yenesei. They had quite recently formed another little syndicate. The *Labrador* sailed on August 5, and they had chartered light-draught paddle-steamers of the Russians to convey their goods on the river. He hoped to hear of her complete success.

Sir Douglas Galton gave an interesting description of the water railway, or "Chemin de fer glissant," which he had seen at the Paris Exhibition. The two principles upon which the system was based were—first, carriage sliding on a thin film of water introduced between the sledge-plates on which the carriage rests; secondly, propulsion of a sliding train by horizontal columns of water, acting through hydrants placed at intervals on the line. The system was originally designed by Girard in 1861, who made a line at his own private house, where he had an inclination of one in twenty. M. Girard died in 1871, and M. Barré, the present exhibitor, had purchased the rights, and made improvements in the system. The line exhibited in the Exhibition is about 200 yards long, but is imperfect, and difficult to find.

M. Preece gave some interesting particulars of the communications going on between the London and Paris post offices as to telephonic communication between those two cities. The distance between London and Paris is 275 miles, made up by 74 miles from London to Dover, 21 miles from Dover to Calais, and 180 miles from Calais to Paris. The mere act of speaking by telephone over a distance of 275 miles is practically nothing. Distance in telephonic matters scarcely enters into the question at all. If they had a wire, or two wires, from the earth to the moon they would probably be able to speak with the inhabitants of the moon if there were any. They have telephones from Paris to Brussels, Lille, and Marseilles, which are perfectly distinct, and in America they speak through still longer distances. The difficulties seem to lie in the underground and the submarine cables. They found that the resistance of these, as they exist, was too great to allow of sufficient current at both ends. But their laboratory experiments showed that these difficulties could certainly be overcome.

In discussing a paper on the dangers of electric lighting, Mr. Preece exposed two popular errors. One is that with the electric light there is no danger from fire. There is, he says, nearly as much danger of fire from the electric light as from gas. Safety depends on the care with which the wires are laid and the quality of the appliances used. But the danger to life is, he says, very much exaggerated. The objection to the distribution of power by means of electricity—that if a man touched a wire he would be killed—was absolutely—in unscientific language—"rot." The State of New York recently passed an Act making execution in future execution by electricity. They had not yet rescinded that Act, but they would be obliged to do so, because they could not get sufficient power to kill a man with certainty. He remembered on one occasion making some experiments with an enormous induction coil, and they tried with a spark about twenty inches long to kill a pig, and they could not. They wanted to try on him (Mr. Preece), but he was not

quite ready to offer his body while other animals could be found. But there were many of them who had taken immense shocks. Newspaper correspondents often got up sensational paragraphs. There was a case at Brighton only three weeks ago in which it was alleged that a man had been killed by a shock from a wire. The Board of Trade sent down Major Cardew to investigate, and he found that the electric current had been turned off two hours before the man was killed.

The number of members inscribed this year was about 2,400, or almost exactly the same as when the Association met in Newcastle the first time in 1838. Professor Abel is elected to the Presidency, and the Association will meet in Leeds next year on September 3.

THE ADULTERATION OF CASSIA OIL.

In April last we commented in these columns upon certain statements in the report of Messrs. Schimmel & Co., of Leipzig, concerning the shameless way in which, they alleged, most of the cassia oil found in commerce was adulterated before leaving the Chinese ports of shipment. Messrs. Schimmel & Co. have a considerable reputation to lose, and are not, therefore, it may be imagined, given to spread alarmist reports without due investigation. Summarising their indictment, it amounted to this—that the greater part of the cassia oil then in commerce was adulterated in the grossest manner; that all the samples of three well-known brands of the oil examined by them were sophisticated with from 23 to 26 per cent. of a fixed resin; and that a parcel of oil which was certified by the Medical Hall at Hong Kong to be perfectly volatile and unadulterated oil of cassia contained 20 per cent. of a resin and an appreciable quantity of petroleum. At the time when these statements appeared we called attention to the gravity of the charges, and caused copies of our journal to be sent to the principal parties in China interested in the article who were not already on our subscription list, calling their attention to Messrs. Schimmel's accusation. Messrs. Yan Long, Cheong Loong, and the other Chinese dealers implicated in the matter, with commendable discretion, have failed, so far as we are aware, to make any public rejoinder to Messrs. Schimmel & Co.; but two mails ago we received a long circular-letter, issued by Mr. Emil Niedhardt, the proprietor of the Medical Hall in Hong Kong, denying and ridiculing Messrs. Schimmel's accusations. We cannot print the whole of Mr. Niedhardt's communication, but, leaving out that part of it which is merely abusive, we may say that his reply to Messrs. Schimmel & Co.'s accusations—which, of course, if proved, must seriously affect his reputation either as a skilled analyst or as a man of honour—amounts to the following:—

Mr. Niedhardt was first asked to analyse and give certificates for cassia oil in September, 1877, when for the first time, according to him, a parcel of cassia oil known to be adulterated was brought from Macao to Hong Kong. This parcel raised suspicion in the mind of the buyer, and since its appearance in the market the Medical Hall has been regularly called upon to analyse and certificate the oil for Hong Kong and Macao merchants, both European and Chinese. Apparently at first the certificates only stated that the oil examined at the Medical Hall was genuine, without entering into particulars as to its specific gravity, &c.; and this went on until 1880, when, in consequence of frequent complaints that the oil brought to market contained a greasy deposit, the handlers of the article requested the addition to the certificate of a clause declaring the oil to be soluble in alcohol

at 80 per cent. Tralles, and to be perfectly volatile. No explanation is given of the circumstance why a simple certificate of the perfect purity of the oil should not be sufficient; but Mr. Niedhardt goes into a long and somewhat confused explanation, to the effect that parcels of cassia oil were frequently submitted to him the quality of which was good—i.e. not adulterated—but which yet contained a certain amount of deposit, often as much as $7\frac{1}{2}$ per cent., and were cloudy in appearance. The agents rejected all such oil, and thereupon the muddy parcels ceased to appear, but in their place oil was brought upon the market which was found to be adulterated with "croton oil, but not the expressed," and oil so sophisticated was soluble in alcohol of 90 per cent., and perfectly volatile. The presence of this "croton oil," however, was perceptible by the lower specific gravity, and consequently at the end of 1884 the dealers demanded the addition to the certificate of another paragraph, stating the specific gravity of the oil. Now, says Mr. Niedhardt, "if from the commencement these integrate points had been demanded by the buyers of essential oils, much loss and annoyance would have been avoided." Why? Surely he does not mean to say that he previously certified oil of cassia to be perfectly pure without having investigated its specific gravity, its volatility, or its solubility? Messrs. Schimmel & Co. say that the certified oil which they exported contained 20 per cent. of solid resin, colophony, or h, and to this the reply is that cassia oil usually contains resin, caused by oxidation, generally amounting to 10 or 12 per cent., which is no adulteration, though it influences the quality of the oil. And Mr. Niedhardt alleges that Messrs. Schimmel's chemist has mistaken this "oxidation-product" for colophony or pitch. The latter substances, he says, are lighter than cassia oil, and so is petroleum, with which the sample was further alleged to have been adulterated; consequently the adulterated oil should have been of a lower specific gravity than true oil, whereas, as a matter of fact, its specific gravity was fully up to the acknowledged average of true oil.

When Messrs. Schimmel & Co.'s report reached Hong Kong the merchants there almost stormed the Medical Hall, demanding an explanation, "than which nothing was easier." A sample of the impeached parcel was still under lock and key at the office of the Hong Kong merchant, and was put to the test by Mr. Niedhardt in the presence of a number of Hong Kong merchants, when it was found to be "perfectly pure," but to contain 16.94 per cent. of resin of oil of cassia, of which the certificate of purity does not seem to have made any mention. Mr. Niedhardt then proceeds to demolish Messrs. Schimmel's contention that this resin was colophony or pitch, and that the sample also contained petroleum, in the following manner:—

Under the eyes of the same gentlemen was then added to rectified oil of cassia (with 2 per cent. of resin of oil of cassia) 18 per cent. of colophony and 2 per cent. of petroleum. Result—Specific gravity 1.049, not soluble in alcohol of 80 per cent. By addition of more colophony the mixture became muddy, separating in a very short time. An addition of more than 2 per cent. of petroleum was at once detected by the smell, the latter covering wholly the fragrance of oil of cassia. The separation of oil of cassia from petroleum took place immediately after ceasing shaking. No one would have bought such a mixture, betraying the fraud simply by appearance. Messrs. Schimmel's chemist did not seem to be sure about his finding the resin by distillation over free fire, and so he resorted to distillation by overheated steam. He observed the strange phenomenon that the greater part of the product sank under water, and another part gathered on the surface of the water. This liquid lighter than water he at once put down to be petroleum, whereas it is stated in several standard works that the cherry-red or brownish coloured oil of cassia by redistillation separates in two pale yellow oils, one lighter (amounting to about one-fourth of the whole), the other heavier, than water. The loss by this process is estimated about 10 per cent. This was known as far back as 1857. Stohmann, in "Muspratt's Chemie," says, quite distinctly, that by distilling oil of cassia yields also a lighter liquid than water, and declares

it to be a kind of hydrocarbon not yet fully studied. Messrs. Schimmel & Co.'s chemist named this lighter liquid, short and sweet, "petroleum"! Let him take the same amount of real petroleum and mix it with oil of cassia, and he will see, very soon, the vast difference!

All the standard books also mention expressly that the oil of cassia absorbs oxygen from the air, "thickens," and forms "different resins" and cinnamyllic acid. The records kept here show that the "least" quality of resin of oil of cassia was 8.5 per cent., in average 12 per cent., though Dr. Hager admits that the oil of cassia, after a year's keeping, can have as much as "35 to 40 per cent. of resin," not volatile at a temperature of 240° Celsius.

This is the essence of Mr. Niedhardt's defence, and though several observations occur to us, as they doubtless will to anyone acquainted with the article, we consider that further comments by outsiders on this interesting dispute are best deferred until Messrs. Schimmel & Co. have had an opportunity to give their version of the affair, which they doubtless will do in a few days, for the matter is too important to be allowed to rest here. The only observation which we will make at this juncture is that it seems a pity that Mr. Niedhardt should have certified as "perfectly pure and volatile," without any qualification whatever, an oil which, according to his own admission, contained the extraordinary proportion of 16.94 per cent. of "resin of oil of cassia," while in his own extensive practice he had found the average proportion of "resin" to be only 10 to 12 per cent.

Arsenic Stories.

The Maybrick Committee—which, it appears, is reluctant to disband itself—has made it clear to the romancists of both hemispheres that arsenic stories may be shot into its capacious credulity, and will be assimilated with relish and with gratitude; and it would be contrary to all experience if, under such circumstances, a decent supply of cloud-capped narratives were not forthcoming. The prize essay in this direction so far comes from America. It is said that "Somer B. Yume, of Providence, Rhode Island, eats every day two heaped table-spoonfuls of arsenic, feels all the better for it, and declares that he would die without it. Twenty-five years ago Mr. Yume was bitten by a rattlesnake. The pains were so intense that in despair he tried to commit suicide by taking arsenic. To his surprise the mineral poison temporarily overcame the snake poison. Since then he has had to eat arsenic twice a day to counteract the effects of the snake bites, which show themselves in swellings of the arm and freezing of the blood every morning and evening." If the Home Secretary can keep Mrs. Maybrick in a dungeon after hearing this story, he is impervious to evidence.

* *

A Bankruptcy Result.

Messrs. Robert Cundall & Co., of Pocklington, send us, as a curiosity, a summary of accounts under the Bankruptcy Act *in re* the affairs of a farmer and horse-dealer who had failed. The debtor had stock and furniture which he estimated to produce 378*l.*, and which actually did realise 248*l.* 17*s.* 9*d.* The costs of realisation, including the court and other fees, amounted to 109*l.* 12*s.* 11*d.*; expenses incurred in regard to the estate, and allowance to debtor came to 26*l.* 9*s.* 1*d.*; the landlord, in accordance with our British legislature's notion of justice to creditors all round, swooped down on the ruins and got the whole of his claim, amounting to 104*l.* 13*s.* 6*d.*; other preferential creditors got 8*l.*; and there was left the noble balance of 2*s.* 3*d.* to satisfy creditors to the amount of 724*l.* 10*s.* 9*d.* Our correspondents, with a claim of 15*l.*, had spent 3*s.* 6*d.* on an affidavit.

* *

Labelling Poisonous Liniments.

The Buckinghamshire coroner has had to guide a jury in reference to one of those sad cases of death through taking liniment in mistake for medicine which are far too frequent, and which might be so generally prevented by the invariable use of some distinctive form of bottle or label. The medicine and liniment had been sent out, as we usually find in these accidents, by a dispensing doctor; and on this occasion not even a red label had been stuck on the liniment bottle to distin-

guish it from its more harmless neighbour. The coroner seemed quite unable to say what is the law about red labels; he had an impression there is some such law, and he was confident that a chemist would have been liable to a penalty if he sent out a poisonous liniment without labelling it "Poison." It is curious how slight an acquaintance with the law affecting the sale of poisons is sufficient to equip a coroner. Very rarely indeed does one of them expound any section of the Pharmacy Act without dropping into a blunder. The 17th section of the Act, which regulates the labelling and registration of poisons sold, applies as much to doctors as to chemists; but according to the 1869 Pharmacy Act its provisions are not applicable in either case in regard to medicines supplied or dispensed if the bottle containing the medicine is labelled with the name and address of the seller, and the ingredients thereof be entered, with the name of the person to whom it is sold or delivered, in a book kept for that purpose. The dispensing doctor has no claim to be treated as other than a seller, but neither he nor the chemist is required by law to label his liniments "Poison," nor to put them in distinctively-shaped bottles, nor to use red or any other labels for them. We hold the opinion that some well-drafted law compelling some distinction would save a good many lives; but it is quite certain that the necessity for such a law is more evident in medical than in pharmaceutical practice.

* *

Amine] Very hopeful experimental operations are now being carried on at Wimbledon to test the value and practicability of a new process of purifying sewage, invented by Mr. Hugo Wollheim, of 101 Leadenhall Street, and described by him as the "Amines" process, because it utilises the organic ammonia bases known under this name. The process has obtained the endorsement of very eminent authorities, and the demonstrations of its efficacy which have been already given have been watched with great interest by the Lord Mayor, the chairman, and other representatives of the London County Council, and by many other persons of authority and experience. So far there seems to be good reason to believe that a real advance has been effected. The *modus operandi*, as now carried on at Wimbledon, is as follows:—The amines are used either pure or in the form of amine salts, or in one of the numerous substances containing them, which occur in nature as well as in the various waste products. Such amine, or substance containing the same, is used in combination with lime, preferably milk of lime. The proportions vary in accordance with the nature of the sewage, and with the attending conditions. At present herring-brine is the most abundant and convenient, and at the same time cheapest substance which contains the amines. It is amply procurable from various localities at a nominal price. This brine is introduced into freshly made milk of lime of the consistency of a thin cream. It is immediately decomposed, and a very soluble new gaseous reagent is evolved, to which the inventor has given the name of "aminol." It announces itself by a peculiar briny odour, similar to that of the sea-breeze. This reagent is a very powerful disinfectant. Mixed with the sewage it almost immediately substitutes a briny odour for the putrid smell which characterises the latter. The sewage flows into settling tanks, and the solid matter very rapidly subsides. The effluent water is discharged, and appears to be perfectly pure. The evidence as to its safety is furnished by the eminent bacteriologist, Dr. Klein, F.R.S. Dr. Klein found that a sample of sewage examined by him contained 2,400,000 organisms in the cubic centimetre, but after treatment by the "Amines" process he found the effluent to be absolutely free from all or any organisms. In fact his experiments go to show that the aminol promptly, perfectly, and permanently sterilises the sewage. As to the economical aspect of the question, Mr. Wollheim states that the cost of the process, while it varies with existing conditions, may be given in round numbers as ranging from $\frac{1}{2}$ d. to $\frac{3}{4}$ d. per 1,000 gallons of sewage treated. In the case of the London sewage (taking the daily flow at 130,000,000 gallons) the cost need not exceed 330l. daily, equal to about 125,000l. per annum. This cost would be reduced by whatever amount might be realised by the manure extracted, the value of which has yet to be tested.



AND

Literary Notes.

Commercial Organic Analysis: A Treatise on the Properties, Proximate Analytical Examination, and Modes of Assaying the various Organic Chemicals and Products employed in the Arts, Manufactures, Medicine, &c. By Alfred H. Allen, F.I.C., &c. Second edition Vol. III., Part 1. London: J. & A. Churchill. 8vo. 439 pp.

It is the privilege of few chemists to strike out a distinct path for themselves in the literature of the science; indeed, there is a certain lack of originality in this respect amongst them. That may be the reason, probably, for the plethora of little manuals dealing with practical inorganic chemistry. Of the few who have ventured into the larger and more fertile fields, one of the most successful is Mr. Alfred H. Allen, the author of "Commercial Organic Analysis," a work originally of three volumes; but now, we observe, the publication of the second edition has necessitated the third volume being divided into two parts. The first volume of the series deals with alcohols, neutral alcoholic derivatives, sugars, starch and its isomers, vegetable acids, &c.; the second, with fixed oils and fats, hydrocarbons, phenols, &c., with illustrations; and the first of the third with aromatic acids, tannins, colouring-matters, and dyes; while the second part will contain chapters on organic bases, albuminoids, cyanogen compounds, &c. It is in consequence of the immense growth in our knowledge of dyes and colouring matters that the author has divided the third volume into two parts; thereby he has given more space to that particular subject, most of the matter being entirely new and covering 270 pages. This matter is of somewhat remote interest to practical pharmacists, but we find in it several subjects which are of as great interest to him as to the dyer; for example, saffron, annatto, cochineal, carmine, gamboge, lac, alkanet, and other similar substances, which are treated in a concise manner, yet with due regard to their medicinal and technical importance. The author being chiefly concerned with the analysis of the articles, their origin is but briefly referred to.

In writing a work of this character an author is largely dependent upon the researches of others for his facts; it would, indeed, be impossible for a single individual to go analytically over the whole range of the carbon compounds during the best working years of his life. So in that respect "Commercial Organic Analysis" is a compilation, but one which differs materially from what are generally accepted as such, being not only an epitome of current literature, but also a record of personal experience on those points which the literature has left doubtful or unsolved. In this connection we may mention the article on saccharine, which so far cannot be said to have got into book literature. The article occupies exactly four pages, in which the mode of manufacture is described, its chemical constitution and characters are given, with eleven different tests for it, and eight references to sources of fuller information regarding some of them, a large portion of the matter being derived from original work by the author. The chapter under which saccharine falls is the one on aromatic acids, which contains a large number of articles relating to medicines and pharmaceutical chemicals. We are specially struck with the accurate character of the information given regarding balsams and aromatic gum-resins, a somewhat difficult subject to treat owing to the facts being isolated and contradictory. The author has succeeded in winnowing these thoroughly, and he gives, regarding such articles as tolu and Peruvian balsams, benzoin and benzoic acid, really admirable monographs. Equally valuable is the very long article on tannins, in which are included all the medicinal substances which yield tannin in marked proportion; but the most valuable part of the article relates to the estimation of tannin, and this is well done. We find that the volume is of very equal character throughout, and it is unnecessary to extend the examination of it further than we have done.

It is difficult to conceive of a book which could be more useful to chemists of all sorts than this. It seems to deal with the substances used in most industries, and that in a manner satisfactory to each. It is for this reason that we think it specially useful to pharmacists—the cosmopolitan chemists of the day—who are frequently called upon to give advice in regard to every conceivable difficulty.

The Metallurgy of Silver: A Practical Treatise on the Amalgamation, Roasting, and Lixivation of Silver Ores. By M. Eissler. London: Crosby Lockwood & Co. 8vo. 350 pp.

If we were asked to select from the many chapters of modern history an industry which is the most typical combination of adventure, fortune, and science, we should have little hesitation in placing silver-mining in the Western States of North America far before anything else. To some the Nevadas have been a grave of disappointment and ruin, or such transient joy as Artemus Ward felt when, on first visiting the silver-mines there, he danced on a pavement of the precious metal. But to a few Fortune has come with superabundant affluence, and has showered her treasures in greater magnitude than it is possible for a mortal man to utilise. These facts are forcibly brought home to us on reading Mr. M. Eissler's "Metallurgy of Silver," one of those eminently practical works which are periodically issued by Crosby Lockwood & Co. In this volume Mr. Eissler tells us very graphically of the rise of the Nevada silver-mines since 1859, the history being a most interesting one, and he succeeds in carrying that interest throughout the whole of the volume in his descriptions of the various processes which are in use for the isolation of silver from its ores. This portion of the book gives us a splendid conception of what science has rendered possible for man to achieve, for, when we contrast the Patio process, invented by Bartholome Medina in 1557, with the most modern methods for extracting silver economically from poor ores, we see how chemical and mechanical science can aid labour. Mr. Eissler's treatise extends to 350 pages, and is well illustrated with engravings of apparatus used in the amalgamation, roasting, and lixiviation of silver-ores, as well as that employed in assaying and refining. The author's position in the metallurgical world, and as an old assayer in the U.S. Mint, enables him to treat the subject in a manner few could excel.

Picture-making by Photography. By H. P. Robinson. Second edition, revised and enlarged. Hazell, Watson, & Viney (Limited), 1 Creed Lane, E.C. Price 2s. 6d.

THE author of this book is well known as a past master in the technical as well as the artistic side of photography, and, possessing as he does the art of clearly and pleasantly communicating his ideas, the book is well worth close study. We would specially recommend those chapters entitled "The Genesis of a Picture" and "Instantaneous Photography," the former as proving most conclusively that photography need not be a mechanical process, and the latter as inculcating a useful and much-needed lesson in these days of rapid shutters and extremely sensitive plates, when the only idea of some workers seems to be how brief an exposure may be given, without any thought of pictures or results. An additional chapter on "Naturalistic Photography" is well worth reading, as being without doubt the ablest criticism so far upon this new school of workers, and we cannot help thinking that Dr. Emerson, the mouthpiece of the new school, would have much difficulty in answering this scathing lesson. The book is well printed and nicely got up, several illustrations giving point to the text when required, and we can thoroughly recommend it.

MESSRS. KELLY & Co. have issued a sixth edition of their Directory of Chemists and Druggists. The work goes much beyond chemists and druggists, comprising, as it does, chemical manufacturers, drysalters, dentists, veterinary surgeons, &c. Altogether some 40,000 persons are named.

WE have received from the Great Tower Street Tea Company (Limited), 5 Jewry Street, E.C., a copy of the second

edition of their interesting illustrated treatise on the natural, social, and commercial history of tea. The facts collected in this seventy-page pamphlet are such as should be useful for all dealers in tea to be familiar with, and advantage has been taken of the opportunity of this second edition to correct the statistical tables to date. The world's annual consumption of tea is estimated at 2,500,000,000 lbs.

A VERY interesting book of travel has just been published by Messrs. Chapman & Hall. It is from the pen of H. de Windt, and describes his travels by land from Peking to Calais. As might be expected, it is full of graphic descriptions of the interior of China, and of the almost unknown route through Mongolia and Siberia. The writer states that cholera often rages in China, and that diphtheria and small-pox cause an enormous mortality. Smallpox is principally epidemic in the early spring. As a prevention, the native doctors adopt the somewhat homeopathic plan of inoculating by blowing a quantity of the virus of the actual disease up the nostrils. He describes how he was made unpleasantly aware of this fact by one of the hotel servants in Peking, who spoke a few words of English. Noticing that one of his nostrils was stopped up with a dirty piece of cotton wool, he inquired if he had hurt his nose. "Oh, no," was the reply; "smol-pok." A doctor's shop was visited one evening—"a dirty, gloomy little den, its grimy walls covered with phials of strange shapes and cruel-looking instruments, while suspended from the ceiling hung a number of dried reptiles and animals, which looked weird and uncanny in the dim, uncertain light." The following is a Chinese prescription:—"Decoction of centipedes, one frog, and three cockroaches; ten grains calomel; three grains morphia; fifteen grains of quinine." The author remarks, "Alas for the poor patient who had to swallow it! Surely the deadliest disease would be preferable to a mixture of cockroach and calomel." Altogether this is one of the most readable books of travel we have ever seen.

EXTRACT FROM THE REGISTER OF DEEDS OF ARRANGEMENT.

The following deeds of arrangement with creditors have been filed at the Bills of Sale Office, under the provisions of the Deeds of Arrangement Act, 1887. Some of these deeds are for the purpose of carrying out compositions with creditors (and such are specified below), but the great majority of them are "assignments" in the ordinary form, to a trustee or trustees, for the benefit of creditors. The Act referred to expressly provides that registration shall not give validity to any deed which is an act of bankruptcy, and there is no provision, in the Act, making any of these arrangements binding upon dissenting creditors.

Thornton, Ellen Louisa, 19 University Street, Easton Road, spinster, surgical appliance maker. Trustee: Charles R. Maddox, surveyor, 9 Warwick Court, Gray's Inn. Date, September 12; filed, September 18; unsecured liabilities, 379*l.* 9*s.* 10*d.*; estimated net assets, 130*l.* 9*s.* 1*d.*

	£	s.	d.
Longton, F. & Co. (Limited), Derby ..	57	14	9
Loveridge, Hy. & Co., Wolverhampton ..	74	16	7
Maddox, Maria Louisa, London ..	231	0	0
(And four under 10 <i>l.</i>)			

THE number of artificial teeth made in America last year by three of the largest houses was close upon 20,000,000, that is, about half the production of the country.

TREATING MONARCHS.—The Sultan is much alarmed by his increasing obesity, and he has just summoned Dr. Sehwnnenger to Constantinople, from Berlin, for whose accommodation a palace on the Bosphorus at Therapia has been prepared, where he is to stay for a week. Dr. Sehwnnenger's treatment has immensely benefited Prince Bismarck; and the Czar was much the better for it, but he soon gave it up, as he is an inveterate gormandiser, and careful and very plain feeding were as impossible to him as the prescription of one tumbler of weak whisky and Apollinaris at each meal, instead of the magnum of champagne which he usually consumes.—*Truth.*

APPRENTICESHIP LAW.

THE essential part of the agreement between master and apprentice is that the master undertakes to teach the apprentice his business, and it is this teaching that distinguishes a contract of apprenticeship from an ordinary contract of hiring and service. The word "apprentice" is, in fact, derived from the French verb *apprendre*, to learn; and it was formerly the law that the word "apprentice" must be used in the contract. It is now, however, settled that no technical words are necessary, if the wording of the contract sufficiently shows the intention of the parties. It is absolutely necessary that it should appear on the face of the indenture that the primary purpose of it is the teaching of the apprentice. A great deal of misapprehension as to the law relating to apprentices would be removed if it were borne in mind that an indenture of apprenticeship is merely an ordinary contract under seal, and governed by the ordinary law of contracts. An infant, as a rule, cannot contract, but may bind himself apprentice, because it is for his benefit. It is usual, however, although not absolutely necessary, for the parent or guardian to join in the deed, to covenant that the apprentice shall carry out its provisions, and to enable the master to recover damages from such parent or guardian in case of any breach of such provisions. The apprentice himself cannot be sued, except under the custom of London, where a master can sue his apprentice if over 14 years of age. The apprentice, however, notwithstanding his infancy, is bound by all the terms of the deed until he is 21. At that age he can repudiate the contract, but must do so within a reasonable time, otherwise he will be taken to have acquiesced in the deed, and be bound thereby. Before discussing the indentures of apprenticeship it may be as well to glance at the question of "going on trial," which is a fruitful source of dispute and litigation, and to endeavour to state what the law on this point really is.

In the absence of any agreement it appears that if a boy goes on trial, or if, for some reason or other, the proposed apprenticeship is broken off, the master cannot recover for board and lodging. Several cases have been decided, and in one of them the defendant being desirous of apprenticing his son to the plaintiff, it was verbally agreed between them that the son should go on trial for a month, and if the parties were satisfied he should be bound apprentice for four years, the defendant to pay a premium by instalments. The son went on trial, and remained about sixteen months, when the defendant removed him. No deed of apprenticeship was executed, nor any part of the premium paid, and it was held that the plaintiff could not recover for the son's board and lodging during any part of the time he had remained with him. In another case a father placed his son with a chemist and druggist, who intended to pass his examination at Apothecaries' Hall, but was delayed in so doing by ill health. It was proposed that the son should be apprenticed to the chemist, but he stayed for five years, having his board and lodging, and being taught the business of a chemist and druggist, but was never apprenticed. It was held that in order to entitle the chemist to recover for board and lodging and for teaching the boy the jury must be satisfied that the son was placed with the chemist upon an agreement or understanding that such chemist was to be paid for his board and lodging and for teaching him; but if the jury were not so satisfied, or if they thought that the son was not to be apprenticed till the chemist has passed his examination at Apothecaries' Hall, then the chemist was not entitled to recover anything for the board and lodging and teaching of the son during the five years. In another case, where a boy was going to be apprenticed to a surgeon, the boy went and served a short time, but the agreement was broken off because the father refused to pay for the stamp on the indenture. It was held that the surgeon could not recover damages for breach of the agreement, nor for the board and lodging of the son during the time he remained with him.

The lesson to be learnt from the above cases is that, in order to provide against future unpleasantness where a youth is to be taken on trial, stipulations should be made beforehand as to payment for his board and lodging and

other matters, in case the apprenticeship should fall through.

Where an apprenticeship is decided upon, it becomes of the utmost importance that the indenture of apprenticeship should clearly define the relative positions the master and apprentice are intended to occupy. A common practice has arisen of buying a stamped form at a stationer's, and filling in the names, dates, &c., and trusting to chance. A little reflection will show how very unbusinesslike such a proceeding is. In any other case of contract—more especially where such contract is intended to cover a number of years—especial care would be taken to have all the terms clearly defined, and that is what ought to be done in cases of apprenticeship. Nine-tenths of the difficulties that arise are due to the parties not using ordinary prudence in setting forth the terms of the contract. There are a great number of terms which are implied by law in every contract of apprenticeship, but the law cannot provide for every case, and especially for cases which arise in particular trades where certain customs are general, but perhaps not universal. The law of custom is always very dangerous to rely upon in any case that has to go into court, as a custom must be strictly proved, and must be shown to be one well known in the trade and of universal application. A well-drawn deed of apprenticeship, however, will generally obviate any difficulty or dispute. The details of such deed must necessarily vary under different circumstances, but, as a general rule, there are certain points which ought to be provided for in every deed. For instance, the hours of attendance at business, hours allowed for relaxation and study, attendance at lectures, holidays, food, clothing, illness, return of the premium in case of death of master or apprentice, place where the business is to be carried on, provision in case of removal or sale of business, and in restraint of competition after the expiration of apprenticeship, and the like. Stipulations ought also to be inserted enabling the master to dismiss the apprentice in case of misconduct or absence without leave, or breach of any of the stipulations of the contract.

The provisions to be contained in indentures of apprenticeship fall under three heads. First, the binding of the apprentice; secondly, covenants by the apprentice, and, if he is an infant, by his father or guardian, for the due performance of the various stipulations of the deed; and, thirdly, covenants by the master to teach the apprentice the business, and provide him with board, lodging, &c., as the case may be. It is not absolutely necessary for the father or guardian to be a party to the indenture, but it must be executed by the infant himself in order to bind him. The execution by the father or guardian alone would be of no avail to bind the apprentice, although of course the ordinary rules of contract would apply, and the master would be able to sue the father or guardian for the apprentice's default. The deed ought to show whether it is intended that the apprenticeship should terminate on the death of the master, or whether it will continue with his executors or administrators after his death if they continue the business, or the person to whom the business is transferred.

It is essential to the validity of the deed that the premium be truly stated therein, and the deed must be properly stamped. The amount of stamp duty is 2s. 6d. where there is no premium, and in any other case 5s. for every 5l. or fractional part of 5l., and is usually paid by the parent or guardian. If the premium, for instance, were 70 guineas, the stamp duty would be 3l. 15s. In cases where a solicitor is employed—and in most cases it is desirable that one should be employed—the payment of his charges is a matter of arrangement. It is most convenient to have all indentures of apprenticeship executed in duplicate, the master holding the original and the parent or guardian the counterpart. The latter requires a 5s. stamp, and ought also to have a denoting stamp (which is affixed at Somerset House gratis), showing that the original is properly stamped. The duplicate is then receivable in evidence in case of the loss or non-production of the original. At the expiration of the apprenticeship the original will, of course, be handed to the apprentice, the counterpart being delivered back to the master. Where only one copy is executed it does not appear clear from the decided cases which of the parties is entitled to hold same during the apprenticeship, but the inference to be drawn from cases deciding other points is that the

master is so entitled. It would be more convenient, however, to have it deposited in neutral custody.

The apprentice being properly bound, the next point to be considered is the respective duties of the master and apprentice, and of the parent or guardian. The master, in the first instance, is bound to teach the apprentice his business, and inability to do so would be a ground for voiding the indenture. The death, too, of the master, in the absence of any stipulations in the contract, puts an end to the apprenticeship, but it does not appear to be settled whether the executors of the master are not liable to continue to maintain the apprentice in the absence of any special provision in the contract. The death of the apprentice, as a matter of course, will determine the apprenticeship, as will likewise permanent incapacity from illness. The return of the premium, or a proportionate part thereof, cannot, however, be claimed in any of the above cases except the first. It is important, therefore, that the indentures should provide that, in the event of the death or incapacity of the master or apprentice before the expiration of the apprenticeship, a proportionate part of the premium should be returned. The same thing may be arranged for in another way, by stipulating that the premium should be payable by instalments, such payment being conditional on the parties being alive and capable of fulfilling their respective obligations when the time for payment of the instalment arrives.

Under the old Bankruptcy Acts the bankruptcy of the master determined the apprenticeship, but under the present Act it is provided by section 41 as follows:—“(1) Where at the time of the presentation of the bankruptcy petition any person is apprenticed or is an articulated clerk to the bankrupt, the adjudication of bankruptcy shall, if either the bankrupt or apprentice or clerk gives notice in writing to the trustee to that effect, be a complete discharge of the indenture of apprenticeship or articles of agreement, and if any money has been paid by or on behalf of the apprentice or clerk to the bankrupt as a fee, the trustee may, on the application of the apprentice or clerk, or of some person on his behalf, pay such sum as the trustee, subject to an appeal to the court, thinks reasonable out of the bankrupt's property to or for the use of the apprentice or clerk, regard being had to the amount paid by him or on his behalf and to the time during which he served with the bankrupt under the indenture or articles before the commencement of the bankruptcy, and to the other circumstances of the case. (2) Where it appears expedient to a trustee, he may, on the application of any apprentice or articulated clerk to the bankrupt, or any person acting on behalf of such apprentice or articulated clerk, instead of acting under the preceding provisions of this section, transfer the indenture of apprenticeship or articles of agreement to some other person.” The apprenticeship may also, of course, be put an end to with the mutual consent of all parties concerned.

In the absence of provision in the contract the master will not be able to put an end to the apprenticeship for disobedience of orders or other acts of misconduct; but where a contract provided that the apprentice should obey all orders and give his services to the business during business hours, it was held that the master was entitled to dismiss him, and the same is the case if the misconduct is such as prevents the master from teaching the apprentice his business. The mere absenting himself by an apprentice from his master's service is not an avoidance of the apprenticeship, and the master would be bound to take the apprentice back on his being tendered. It has been held, however, that where the apprentice runs away and enlists, that that puts an end to the indenture, but it is a question whether a master would not be entitled under such circumstances to a habeas corpus to have the apprentice delivered up to him. The fact, too, that an apprentice is an habitual thief would entitle his master to discharge him, but it is doubtful whether one act of theft would be sufficient.

In the absence of any stipulation in the indenture as to the place where the business is to be carried on it is to be presumed that it is to be carried on where the business was actually carried on at the date of the indenture being entered into. The question does not appear to have been tried in the case of an indoor apprentice, where a removal from one shop to another would be practically immaterial, but an outdoor apprentice cannot be required to attend at new business premises less convenient of access.

The parent or guardian who covenants for the due performance of the deed cannot be sued for slight misconduct on the part of the apprentice, as, for instance, where an apprentice stayed out late on Sunday evening beyond the time allowed. To entitle the master to sue, the conduct of the apprentice must be such as to be likely to cause him actual damage. A master, however, is entitled to bring an action against any person who detains an apprentice after knowing him to be such. Nevertheless, the master may waive the tort and allow the apprentice to remain, and sue the party who employs him for work and labour done by his apprentice. He is also entitled to bring an action for any injury done to his apprentice, as, for instance, where an apprentice had his hand injured in such a way as to disable him from business the master recovered damages.

Where an apprentice is bound to two persons carrying on business as partners, if one of them retires it is a breach of the contract.

The Employers and Workmen Act, 1875 (38 & 39 Vict. c. 90), s. 5, provides as follows:—“Any dispute between an apprentice to whom this Act applies and his master, arising out of or incidental to their relation as such (which dispute is hereinafter referred to as a dispute under this Act), may be heard and determined by a court of summary jurisdiction.” Section 6: “In a proceeding before a court of summary jurisdiction in relation to a dispute under this Act between a master and an apprentice, the court shall have the same power as if the dispute were between an employer and a workman, and the master were the employer and the apprentice the workman, and the instrument of apprenticeship a contract between an employer and a workman, and shall also have the following powers:—(1) It may make an order directing the apprentice to perform his duties under the apprenticeship; and (2) if it rescinds the instrument of apprenticeship it may, if it thinks it just so to do, order the whole or any part of the premium paid on the binding of the apprentice to be repaid.

“Where an order is made directing the apprentice to perform his duties under the apprenticeship, the court may from time to time, if satisfied, after the expiration of not less than one month from the date of the order, that the apprentice has failed to comply therewith, order him to be imprisoned for a period not exceeding fourteen days.”

Section 7: “In a proceeding before a court of summary jurisdiction in relation to a dispute under this Act between a master and an apprentice, if there is any person liable under the instrument of apprenticeship for the good conduct of the apprentice, that person may, if the court so direct, be summoned, in like manner as if he were the defendant in such proceeding, to attend on the hearing of the proceeding, and the court may, in addition to or in substitution for any order which the court is authorised to make against the apprentice, order the person so summoned to pay damages for any breach of the contract of apprenticeship to an amount not exceeding the limit (if any) to which he is liable under the instrument of apprenticeship.

“The court may, if the person so summoned or any other person is willing to give security to the satisfaction of the court for the performance by the apprentice of his contract of apprenticeship, accept such security instead of or in mitigation of any punishment which it is authorised to inflict upon the apprentice.”

It is more probable, however, that instead of invoking the aid of the magistrates, which is the court of summary jurisdiction referred to, and whose jurisdiction is limited to 10*l.*, our readers would prefer to proceed by civil action, either in the county court or in the superior court, on the indentures of apprenticeship against the father or guardian, to recover damages for breach of the stipulations in the deed. It only remains, in conclusion, to draw attention to the legal maxim, “*Vigilantibus non dormientibus equitas subvenit*,” and to remind our readers that if they want to have their apprentices well in hand, they had better see that the knot binding them together in the first instance is properly tied.

THE U.S. DEPARTMENT OF AGRICULTURE has been conducting an official investigation into the American baking-power industry. It finds that the American people pay at least \$25,000,000 a year for baking-powder, and that the cost of it to the manufacturers is less than one-third of that.

Metropolitan Reports.

CRICKET.—A match was played on September 14, at Nunhead, between the Longford (Rylands & Sons, Limited) and S. Maw, Son & Thompson's C.C. The former went in first and scored 83, and the drug firm had lost four wickets for 49 when play ceased.

MISTAKEN FOR BEER.—A case of poisoning, curiously similar to one which happened at Barnet a fortnight since, occurred last week at Potter's Bar. A labourer named Hatton, in the service of Mr. John Currie, finding a barrel of liquid for destroying weeds in the potting-shed, is supposed to have drawn some off and drunk it in mistake for beer. He died soon afterwards.

THE FULHAM DISPENSER.—At the meeting of the Fulham Board of Guardians, on September 12, a letter was read from the Local Government Board, stating that the proposed salary to be paid to the dispenser—165*l.* per annum—was too high, and asking the guardians to reconsider the matter. The clerk pointed out that the services of the dispenser were dual—viz., dispenser to the infirmary and out-door dispenser. It was thought by the committee that the salary was not too high for a competent man. They followed the example of what was paid to the dispenser of Shoreditch Workhouse. The clerk was instructed to write to the Local Government Board, citing the Shoreditch case.

THE INTRODUCTORY ADDRESSES at the London Hospital Medical Schools are to be given on October 1 as follows: At the Middlesex Hospital, by Mr. J. Bland Sutton, F.R.C.S., followed by the distribution of prizes by Lord Sandhurst; at St. George's Hospital the address will be delivered by Dr. T. Clifford Allbutt, F.R.S.; at St. Mary's, by Dr. Maguire, followed by a dinner in the evening; at St. Thomas's Hospital, by Mr. William Anderson, F.R.C.S.; at University College, by Mr. Rickman J. Godlee, F.R.C.S.; and at the Westminster Hospital, by Dr. P. S. Abraham, after which the prizes will be distributed by Professor Macalister, F.R.S. At St. Bartholomew's, Charing Cross, Guy's, London, and King's College Hospitals, the session will be opened without any formal address. At the Royal Veterinary College the introductory address will be delivered by Dr. Gerald Yeo, of King's College.

THE FATAL FIRE AT WANDSWORTH.—The death of the fireman William Godfrey Jacobs, 27, a second-class fireman of the Metropolitan Fire Brigade, who lost his life in the disastrous fire at Messrs. Burroughs, Wellcome & Co.'s chemical factory in Bell Lane, Wandsworth, on Thursday of last week, was the subject of an inquest before Mr. A. Braxton Hicks on Saturday last. The Coroner said it would be the duty of the jury to inquire into the origin of the fire as well as the actual cause of the man's death. Among other evidence Sidney Copeland, assistant to Messrs. Burroughs, Wellcome & Co., deposed that he entered the drying-room on the top floor for the last time about twelve. No one worked in that room, which was used only for drying empty bottles and non-combustible powders. The usual temperature of the room was about 110° Fahr. Shortly after he saw some fire in the centre of the room, and he immediately screamed "Fire, Fire!" and some workmen came up from close by. Some of them came up with hand-grenades, which they threw into the room. There were girls who had been working in the next room, and having seen that all the workpeople were all right, he went downstairs. In reply to the coroner witness said a thermometer was kept in the drying-room. It was immediately upon his opening the door that the flame burst out. The flare seemed to emanate from the floor, and about three yards from the door and in the centre of the room.

By Mr. Wellcome: There was no loose paper in the room. The flame was of a yellowish crimson colour.

The Coroner said that as the question of an explosive had arisen it would be necessary for him to communicate with the Home Office authorities in order that he might obtain their assistance.

Arthur Percy Smith, a scientific chemist, and manager to Messrs. Burroughs, Wellcome & Co., stated that at 2.25 P.M. on Thursday he was in the packing-room, speaking to the foreman, when he heard Mrs. Middleton shout "Fire!" He stated what he saw of the fireman, and in reply to the

Coroner said: The drying-room was swept out every day, and occasionally washed down. Chlorate of potash was not in itself inflammable, but it would take fire if mixed with a combustible ingredient. They used only safety matches, and only one man in each department was allowed to light the gas under pain of dismissal. There was nothing to prevent any person going into the room.

According to the evidence of members of the fire-brigade it appears that it is the duty of a senior fireman to see that his junior was got out in safety, therefore the probability was that Jacobs, being the senior man, assisted Ashby out and was unable to help himself.

The inquest was adjourned in order that the Home Secretary could be communicated with, the Coroner remarking that no blame had been suggested as attaching to anyone.

The funeral of the young fireman Jacobs took place on Tuesday at Highgate Cemetery. His father and a young woman to whom he was to have been married in a week or two were among the mourners. The fire-brigade were largely represented. Mr. Wellcome attended on behalf of his firm, and among the many beautiful wreaths sent was a very handsome one from Mr. Wellcome, bearing the inscription, "Honour to the Brave." Jacobs fortunately had no one dependent upon him except a young brother, whom Messrs. Burroughs, Wellcome & Co. have intimated their intention of amply providing for. Ashby, the fireman who was injured at the same time, is progressing favourably.

Provincial Reports.

Items of news, and newspapers containing matters of interest to the trade, sent to the Editor will much oblige.

BIRMINGHAM.

THE MAYORALTY.—Mr. Councillor F. C. Clayton, who was formerly a chemical manufacturer in business in the city, but has now retired, was waited upon by a deputation of councillors on Monday and presented with a requisition requesting him to allow himself to be nominated as Mayor in November next. Mr. Clayton consented.

LADY DISPENSERS.—The local papers contain advertisements for a lady dispensary pupil at the Skin and Lock Hospital. The applicant, it is stated, must be "quick, intelligent, and well educated," and the situation is regarded as giving "an exceptional opportunity for those wishing to qualify for the Pharmaceutical Society." There have been several applications for the appointment.

MR. RICHARDS, who for a long time has been dispenser at the Birmingham Workhouse Hospital, has resigned that post and commenced business on his own account in Spring Hill. He is sandwiched by Messrs. Prosser and Adams, all close to each other. The assistant dispenser at the Workhouse Infirmary is Mr. Lear, son of Mr. Lear, of Coventry Road; but as he is not yet legally qualified under the Pharmacy Act 1868, he cannot accept succession. It is not a lucrative post.

DEATH UNDER AN ANÆSTHETIC.—Mrs. Neale, the wife of Mr. Alfred Neale, of Crompton Road, Handsworth, 24 years of age, had decided to have several teeth extracted in order to have an artificial set inserted, and on Saturday a medical gentleman, who had been in the habit of attending the family, together with a local dentist, was called in. Chloroform was administered to the lady, but before she had drawn her breath half a dozen times she suddenly slipped from her chair, and died almost immediately. The professional gentlemen engaged are stated to have taken every precaution in the administration of the anæsthetic. The deceased had only been married twelve months. An inquest was held on Tuesday at the Stork Hotel, Heathfield Road, before Mr. F. W. Topham (Deputy-Coroner for the district). The medical evidence went to show that there had not been sufficient chloroform given to the deceased to kill a baby. In proof of this the doctor himself took more chloroform while giving his evidence without it having the slightest effect. There could be no doubt that death had resulted from

syncope, accelerated by the chloroform Mrs. Neale had taken. The Coroner said he thought it unnecessary to call further evidence. He thought everybody concerned was entirely exonerated from blame. The jury returned a verdict in accordance with the medical evidence.

AN "ALL-NIGHT CHEMIST" AND THE LICENSING JUSTICES.—On Thursday of last week Mr. Martin Magor, chemist, of 126 Corporation Street, who for some months past has kept open his establishment all night, applied to the licensing magistrates for an "off" wine licence. Mr. Glaisyer, who represented Mr. Magor, said the application was necessary because the Excise authorities would not allow a chemist to sell medicated wines other than those indicated in the British Pharmacopoeia unless he had a wine licence. There were such heverages as coca wine and pepsin wine, which doctors prescribed, but which could not be sold without such a licence. Several questions were asked by the magistrates about the necessity for such a licence. Mr. Lloyd said: Why should the public go to a chemist for these things, and not to a wine merchant? Mr. Glaisyer: They cannot get them at a wine merchant's. Mr. Lloyd: Then every chemist in the town will have to have a wine licence unless the law is altered. Mr. Glaisyer: Yes, sir. Messrs. Southall & Barclay have already got one. Mr. Magor was then called. He said he sold the wine without a licence until the supervisor called upon him and cautioned him. Mr. Glaisyer: The wine the applicant wishes to supply is not one for ordinary drinking purposes, but that prescribed by medical men. It would not be such wine as Mr. Lloyd would be likely to drink as a beverage. Mr. Harris: But if he gets this licence he will be able to sell wine which people will like. Mr. Glaisyer: No doubt. Mr. Magor said he was willing to give a written undertaking not to sell any but medicated wines. He had already given such an undertaking to his landlords, the trustees of the Wesleyan Central Hall. Mr. Lloyd: It is a serious thing if every chemist in the town is going to apply for a licence which will enable him to sell sherry. Mr. J. D. Goodman: Is your shop advertised to be open all night? Mr. Magor: Yes, sir. Mr. Goodman: He says his shop is advertised to be open all night. Mr. Barradale (magistrates' clerk): But he cannot sell intoxicating drinks all night. Mr. Lloyd: He could if we granted the licence. Mr. Barradale: If he did so he would be under a penalty. Mr. Harris: If this gentleman becomes a publican instead of a chemist he will have to shut up his shop at eleven o'clock. Mr. Barradale: If he sold a bottle of this wine after eleven o'clock he would be liable to a penalty; but that would not prevent him selling Epsom salts. (Laughter.) An application was made at the same time by Mr. Charles Thompson, chemist, 159 Stratford Road, for a wine and sweets licence. Both applications were granted.

CHEMICAL EXHIBITS AT THE ELECTRICAL EXHIBITION.—A feature of the Electrical Exhibition at Bingley Hall, which since its opening has gradually increased in popular favour, is the number of exhibits which local chemists' firms have staged. The displays are placed in various parts of the hall, and are the objects of much curiosity, especially to the uninitiated. First in point of general interest come the exhibits of Philip Harris & Co. (Limited), manufacturing and analytical chemists, of the Bull Ring, Birmingham. There are shown on the stall some very fine crystals of chemicals for analytical, photographic and manufacturing purposes, together with a delicately constructed polarimeter for the examination of sugars, terebene, essential oils, cinchona alkaloids, &c. They also exhibit their universal microscope, and several microscopic lamps, including the new one, in which the light is transmitted along glass rods, bent in such a fashion as to allow it either to be brought directly under the surface of the stage or thrown upon the object. There is also a capital selection of chemical and physical balances, Bunter's gas-analysis apparatus for the speedy estimation of furnace-gases, induction coils for demonstration, electrical apparatus for lecture purposes, artificial flowers and models of the human eye to aid the lecturer, medical batteries, Bayley's colour standards for use in the estimation of combined carbon in steel, photographic materials, and filters by various makers. The stand occupied by Messrs. Austin Brothers, Excelsior Chemical Works, Neshells, Birmingham, also at London and Glasgow, is well and neatly laid out with their manufactures, which consist of fireproof starch glaze,

horax, soap powders, starch, blue, blacking, black lead, and a variety of other articles. In the centre of the stall is erected an Eiffel Tower, cut out of bronzed card-board, which stands over 4 feet high, with a scale on the side showing the comparative heights of the highest buildings in the world. They also show a very fine crystal of English borax 30 inches high, and other specimen crystals of their chemical products. Messrs. W. & T. Avery, of Birmingham and London, exhibit a large number of scales, amongst them being a splendidly-adjusted chemical balance. The balance has a 12-inch beam, specially constructed to withstand the fumes of acid in the laboratory, and adjusted to the greatest possible delicacy. It is made to carry 1,500 grains in each pan, and is distinctly responsive to $\frac{1}{1000}$ part of a grain. The beam moves on a centre knife-edge of agate, working on an agate plane, and has an agate knife-edge at each end, from which the pan is suspended by means of a shackle containing an agate plane. The points of the arrest, which support the beam and shackles, are jewelled. The beam is divided to receive rider weights, which, by a mechanical contrivance, can be moved at will from the outside of the case. The bottom of the case may be of tinted plate-glass. Ivory pan-steadying apparatus may also be added. Spirit levels are provided. The whole is enclosed in an air-tight glazed case. Mr. R. Cruickshank, of the Camden Street Chemical Works, Birmingham, has a stall, on which are exhibited nitric, muriatic, and prussic acids, cyanide of potassium, fluoric acid for glass-etchers, chemicals for electroplating, nickelling, brassing, and tinning trades, and preparations of copper, zinc, nickel, and other metals.

BRISTOL.

THE GAS EXPLOSION at the shop of Mr. J. H. Williams, chemist, Cheltenham Road, which we reported last week, was said to have been caused, not as was stated, by Mr. Williams striking a match to find where the escape was, but in this way:—A jet of gas is kept burning in the shop all night, and when the door of the laboratory, where the escape probably took place, was opened in the morning the gas was fired. The laboratory was considerably wrecked. The side door was almost blown off its hinges, the glass was blown out of the door leading into the shop, the whole of the woodwork was singed, and several articles were set on fire. In the laboratory there are several cupboards containing bottles of chemicals, but these were not broken, and, singularly, although the thick plate-glass in the centre window was blown to atoms, the large show-glasses in the window were uninjured.

LIVERPOOL.

CHEMISTS' ASSISTANTS' SOCIETY.—One of the objects in founding this organisation was the prosecution of hotanical study during the summer months. It is difficult for a large number of assistants to get away at the same time, but several hotanic excursions have been made by some of the members. Mr. Thornton and Mr. Freecroft have both left Liverpool, so that the new session, which commences in October, must be inaugurated by the election of a new president and vice-president.

HORSE-FLESH AS FOOD.—A few days since a veterinary surgeon of this city was accosted by a decayed member of the Turf with whom he was casually acquainted, and asked if he knew of any horses suffering from incurable lameness but otherwise healthy and in good condition. On inquiring the object of such request he was, "in confidence," informed that he had a commission to purchase them cheaply for the proprietors of a well-advertised preparation supposed to contain the concentrated nutriment of fine English beef, and sold chiefly by stores and grocers. This is quite distinct from a somewhat similar case reported in the newspapers recently.

THE FAUNA OF LIVERPOOL BAY.—In the form of an octavo volume of 240 pages, 12 plates, and a plan, Professor Herdman has issued a further report, written by members of the L.M.B.C. Some years ago the fauna of the Liverpool Bay was uninvestigated by any organised body of workers, and we were accustomed, with few exceptions, to regard this expanse of water as useful only for bearing ships to and

from this port. Now there are two organisations, the Liverpool Marine Biological Committee and the Biological Society, investigating, classifying, and reporting on the myriads of living creatures found therein, and publishing the results of their observations. The Biological station on Puffin Island, about one mile from the extreme point of Anglesey, and inaccessible in stormy weather, was formerly a Dock Board observatory, but is now fitted with laboratory and other accommodation, and has its curator, who, apart from the periodic visits of the members, is the sole inhabitant of the island. That not fewer than 1,456 species have been observed and recorded, 21 of these for the first time in British seas, and 9 new to science, is evidence that there is abundant material to justify the existence of a biological society here; but it is not so obvious why there should be two societies or why both should publish the same matter. The report referred to, although a respectable volume of 240 pages, with 12 plates and a plan, consists of papers abstracted from the proceedings as published by the Biological Society, and, whilst absorbing the attention of the naturalist, can scarcely be said to justify an independent existence. It includes Algae, Diatomaceæ, Sponges, Echinodermata, Copepoda, higher Crustaceæ, Polyzoa, Nudibranchiata, Tunicata, seals, and Cetaceans.

OLDHAM.

PEDESTRIANS going towards Mumps, from Yorkshire Street, cannot fail to notice a striking advertisement of Beecham's pills on the railway bridge. The letters are of an enormous size, and the words stretch right across the street.

SEQUAH is at present in this town, writes a correspondent, and is conducting his operations on a very large scale. He appears to have fairly captivated the people with his astonishing cures. What with competition, short time in cotton trade, and Sequah, trade is in a miserable condition here.

SHEFFIELD.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY.—The annual general meeting was held on Wednesday evening in the society's new rooms in the Whiteley Institute. They present a very good appearance, the laboratory, which is well fitted with accommodation for about twenty students, attracting much attention. Mr. Learoyd (the president) occupied the chair, and the Hon. Sec. (Mr. Morrison) read the report for the previous session. It showed the society to be in a more flourishing condition than ever, both financially and in other respects; for, after all the various expenses incurred in moving into the present rooms, there is still a substantial balance in hand. In the School of Pharmacy the number of students has increased by twenty, the average attendance being over 80 per cent. The report was adopted unanimously. Next came the votes of thanks to the past council and officers, as well as to the lecturers. The election of council for the ensuing session resulted as follows:—Messrs. Bradwall, Ellinor, Fox, Grierson, Humphrey, Learoyd, Morrison, News-holme, Preston, Rhoden, Ward, and R. Watts.

WARRINGTON.

PHARAOH'S SERPENTS.—At the Police Court on Saturday, when the business was finished, Inspector Spinks submitted to the bench a report showing that a child, 5 years of age, had bought at a confectioner's shop a "python," intended to be lighted and to produce a serpent. The child thought it was an eatable, and he gave an egg to his sister, aged 2 years, who had become very ill in consequence. Mr. Bamford, chemist, had told him that the egg contained phosphorus and potash. The Clerk said he thought a confectioner should not sell that sort of thing. The Mayor: What can we do? The Clerk: You can do nothing that I know of. You might recommend confectioners not to sell them. It is a sort of firework. The Mayor: Then I think they ought to have a licence. They incur a great responsibility in selling these.

WYCOMBE.

THE LINIMENT TAKEN IN MISTAKE.—An inquest was held last week before Mr. G. A. Charsley, coroner, concerning the death of Mrs. Sophia Louisa Johncock, who had died a few days previously. She had been ill for six months, and had been attended by Dr. Fleck. Dr. Fleck was sending her a liniment and a medicine to take. The last supply of medicine was dispensed and sent out by Mr. W. A. Moreton, registered surgeon, and assistant to Dr. Fleck. On this occasion the liniment, which contained belladonna, did not bear a red label, as previous bottles of liniment had done. The deceased's sister poured out for her a dose from the liniment bottle instead of from the mixture bottle. The patient took the poison, and the mistake was at once discovered. A doctor was sent for, and came immediately, and the stomach-pump was applied and antidotes given; but death resulted. Mr. Moreton gave evidence, and admitted that the bottles were sent out, as produced, without a red label. In reply to a jurymen, he said it was not usual to label liniments "Poison," but "For outward application only." The other doctor called, Mr. L. W. Reynolds, in answer to the coroner about a red label, said it is a matter of usage. I don't know whether it is compulsory. I always do it myself, and send in blue bottles. I very seldom put "Poison," unless it is a very concentrated poison. I put "For outward application only," and I put it in blue bottles of different shape. The Coroner, in summing up the evidence, said it seemed quite improper that any liniment should be sent out without a red label. If a chemist had so sent it out he would have been liable for not putting the word "Poison" on it. With regard to a doctor, he did not think there was anything compulsory on him to put a red label; but it was for the jury to say whether the doctor, by not putting the liniment in a different bottle, or not putting on a red label, so as to guide anyone not accustomed to medicine, had been guilty of culpable negligence. After the jury had found a verdict of "Death by misadventure," the Coroner, addressing Dr. Moreton, said the jury desired him to say—and in this he perfectly agreed—that there had been a great amount of negligence on his part in not putting the usual label on the last bottle of liniment, and in not supplying it in different bottles to that the other medicine was supplied in. Probably Dr. Fleck had not supplied him with different bottles, so that some of the blame was taken off his shoulders and would rest with Dr. Fleck. He hoped it would be a warning to Dr. Moreton and all doctors to see that liniment which contained poison should be put in bottles of different colour and shape to those in which other medicine was supplied, so that even if taken up at night there could be no mistake. He hoped it would be a caution to all doctors to put liniment into different bottles. A Jurymen: And to put the word "Poison" on. The Coroner: To put the word "Poison" on as well as "For outward application."

IRELAND.

THE salary of the dispensary officer at Aghadowey is proposed to be increased by 20*l.* per annum, making it 130*l.*

MR. JOHN CHANCELLOR, photographic chemist, Lower Sackville Street, Dublin, has been appointed to the magis, tracé of the metropolis of Ireland.

THE Local Government Board has sanctioned the appointment of Mr. Reardon, L.A.H. Dublin, as dispensary officer for Bruff, vice Dr. McNamara, lately resigned.

THE Board of Guardians of the Cavan Union invite applications for the position of dispensary officer for the Bellanagh district, the salary being fixed at 120*l.* per annum.

THE Governors of the County Monaghan Infirmary have appointed Mr. Swan to be apothecary, registrar, &c., vice Dr. Faris, L.A.H. Dublin, who has transferred his services to the County Clare Infirmary.

AN enterprising city chemist, who hides his identity under the cover of a *nom de plume*, is advertising extensively in the Dublin newspapers his readiness to supply drugs, &c., by post, at prices considerably under cost. Among other things, he offers quinine at 4*s.* 6*d.* per oz.

It is evidence of the keen competition which exists

among Irish dispensary officers that an enterprising medico is offering, through the columns of a Dublin daily, a handsome bonus to anyone supplying information regarding forthcoming vacancies.

THE Committee of Management of the Belfast Union notify that they will on Thursday, October 3, appoint a duly qualified gentleman as dispensary officer for the Castlereagh sub-district, at a salary of 135*l.* per annum, exclusive of various fees attached to the position.

THE WEEK'S POISONINGS.—At Dublin a woman, name unknown, poisoned by drinking carbolic acid; at Belfast a man, by swallowing a quantity of laudanum; and at Clontarf a young man named Brien, by imbibing a pint of paraffin oil in mistake for beer.

TENDERS FOR DRUGS, MEDICINES, &c., are invited by the Guardians of the following Unions:—Mill Street (county Cork), Ballymahon, Carrickmacross (24th inst.), Carrick-on-Shannon (26th inst.), Navan (25th inst.), Manorhamilton, Granard, Gort, Strokestown, and Tralee (25th inst.).

EXTREMES MEET.—“Cutting,” it appears, is by no means confined to the craft, as I notice an extensive advertisement of a Dublin perfumer who offers to the public a “stimulating lotion” for the hair at the modest sum of 3*s.* 9*d.* per bottle, while a neighbouring rival puffs up his “magic hair restorer” at 2*d.* for the same quantity.

DR. E. J. HARMAN, L.A.H. Dublin, one of the oldest medical practitioners in the north of Ireland, died last week at his residence, Lurgan. The deceased gentleman held for upwards of twenty years the position of dispensary officer to the Lurgan district, and was a general favourite with all classes of persons.

AT Dublin on Saturday last a man named Doherty was charged with having on Friday evening savagely assaulted Mr. James Campbell, an assistant in the establishment of Messrs. Hoyte & Sons, chemists and druggists, Lower Sackville Street, and with assaulting the constable who arrested him. Mr. James N. Hardy, managing partner in the firm, deposed to seeing the prisoner standing in the narrow passage between his office and the compounding department. Mr. Campbell inquired his business, and the prisoner set upon him in a brutal manner, and on the arrival of the policeman turned his attention to the latter. Prisoner was at one time an employé of the house. The magistrate imposed a fine of 20*s.*, or four weeks' imprisonment.

IRISH PHARMACEUTICAL CHEMISTS' ASSOCIATION.—The monthly meeting of this association was held on September 11, at the Council Buildings, 11 Harcourt Street, Dublin, Mr. T. J. English, president, occupying the chair. Mr. E. McCreery S. Hill, hon. secretary of the association, tendered his resignation by letter in consequence of his forthcoming departure for Australia, and Mr. J. F. Meyler was elected hon. secretary in his place. A warm vote of thanks was subsequently passed to Mr. Hill for his untiring efforts. A lengthy discussion arose with reference to the nomination of candidates for election on the council of the Pharmaceutical Society in October, but owing to the unavoidable absence of the late secretary, Mr. Hill, the consideration of some communications from the registrar of the Pharmaceutical Society was postponed until the next meeting.

FRENCH PHARMACEUTICAL NEWS.

(From our Paris Correspondent.)

DEATH OF A FASTER.—Maillard, who, last month, for a wager successfully accomplished a twenty-five days' fasting experiment, has been less fortunate than Succì. A few days after his fast he was taken with blood vomiting caused by his abstinence, and soon afterwards died at the Lyons Hôtel-Dieu.

ENLARGING THE PARIS COLLEGE.—While professors and students are off on their summer vacation, masons are at work building an additional story over the wings facing the rear courtyards. The new halls are to be used as pharmaceutical laboratories. The present ones in the basement are considered inadequate and insufficiently lighted.

CLOSING THE EXPOSITION.—Hopes were entertained that the Exposition could be prolonged a week or two into November, but the managers, on September 10, declared they are bound by formal engagements with exhibitors and railway companies, and must on October 31, at night, close the gates for good.

ENFORCING THE PHARMACY LAWS.—The Minister of Commerce has by a circular reminded schools of pharmacy professors and faculties that, no one being by law permitted to take the oath as a pharmacist before he is 25 years of age, they must hereafter be strict and withhold from persons under that age the diploma entitling them to practise.

THE EIFFEL TOWER MODEL PUBLIC PROPERTY.—On November 28, 1888, Jaluzot (of the *Printemps* establishment) caused the seizure of drawings and castings at Digeon's place, where a six-metre brass model of the Eiffel Tower was being made for Dupasquier, who proposed to exhibit it in America, together with a panorama of the Exposition. Jaluzot claimed to have made a contract with M. Eiffel, granting to the *Printemps* man the exclusive right to the use of all reproductions of the monument by drawings, photos, models or otherwise. The case recently came up before the Seine civil court, which held that Eiffel having built his tower for the State, and received in compensation therefor 1,500,000*fr.* cash, and the right to all receipts from ascensions and restaurants until 1910, he had no proprietary copyright in the reproduction of the monument; hence he could cede none to Jaluzot, and the latter overstepped his rights by seizing Dupasquier's models. On the other hand, although Digeon and Dupasquier showed considerable temerity in going on notwithstanding Jaluzot's and Eiffel's claims, they were entitled to damages, the State having abandoned to the public its vested right in reproducing the tower. Consequently the Court rejected all Jaluzot's demands, and sentenced him to pay Dupasquier 1,000*fr.* damages; Jaluzot and Eiffel were cast in costs as regards the State and Dupasquier; and Jaluzot in costs as regards his action against Eiffel.

PASTRÉ-BEAUSSIER GETS FOUR MONTHS.—This now notorious pharmacist's assistant was, on August 16, arrested in the Exposition while trying to pick pockets, and found to have in his possession a silver medallion stolen the day before from a table in the Russian section. The charge being clearly proven, four months' imprisonment was the sentence on the former dispenser. But if the offence is commonplace enough, the prisoner is not. It will be remembered that last May Pastré-Beaussier was on trial for his life, on the charge of having, while an assistant to M. Decamps, a pharmacist at Havre, poisoned with arsenic some fifteen persons, three of whom died. Owing to the lack of proof the jury acquitted him, as was at the time related in THE CHEMIST AND DRUGGIST. Since then the young man, who has a wife and two children, has found it difficult to earn a living. Being a skilful pharmacist he tried, after assuming his mother's maiden name, to obtain employment in Paris, and applied to a pharmacist there in need of an assistant, who, favourably impressed with his appearance, was going to engage him, when he asked him where he had served last. “At Finot's, at Asnières,” he answered. “Then you must have known Pastré, the poisoner. Tell us about him.” “A poisoner? indeed he was not!” and so, launching into a warm defence, he betrayed himself, and was summarily dismissed. In the meantime his wife, an excellent seamstress, had obtained work, but lost it as soon as her identity was suspected, and for a while the unfortunate couple subsisted on the charity of M. Finot, the Asnières pharmacist, some English ladies, and other benevolent persons. At one time Pastré even thought of opening a restaurant, but his family, on being applied to for funds, wisely refused any money for so risky an undertaking. Little by little all their scant jewellery had found its way to the pawnshop, and the family was sorely straitened, when he bunglingly tried to pick pockets in Machinery Hall. His trial before the Correctional Tribunal attracted crowds, as might be expected. In appearance, it seems, he has not changed; he was as ever cool, correct, and dressed faultlessly, only his wonderful self-possession forsook him. While before the Rouen assize court, where his head was at stake, he remained apparently the most unconcerned of all present; in the Paris tribunal he completely broke down and sobbed bitterly.

Legal Reports.

AN APPRENTICESHIP CASE.

At the Lincoln County Court on September 13, before His Honour, Judge Stephen, and a jury, John Thomas Birkbeck, chemist and druggist, Bailgate, Lincoln, sought to recover 50*l.* from Mr. Edmund Boulton, schoolmaster. There was also a counter-claim brought by defendant for 50*l.* Mr. F. C. Brogden appeared for the plaintiff, and Mr. Porter represented the defendant. Mr. Brogden explained that in 1887 it was agreed between the parties that defendant's son should be apprenticed to plaintiff at a premium of 60*l.*, half of which was paid on the signing of the indenture, and the balance to be payable at the end of two years. In the course of the two years plaintiff had occasion to make certain complaints of the lad to the father, as he had been asked to do. In December, 1888, he wrote to defendant saying the lad had used improper language. Defendant sided with his son, and the result was that some angry words passed between the two, and defendant took the boy home, and the lad did not come back to his work. Mr. Page, solicitor to the defendant, wrote to plaintiff asking him to call at his office with a view of cancelling the indenture. Plaintiff declined to cancel the indenture just when the boy was becoming of great service to him. Plaintiff consequently wrote to Mr. Page saying he positively refused to cancel the indenture, and that he would be glad if the boy would return to work as soon as possible, as his absence was causing him considerable inconvenience. He also added that he would have to engage an assistant, which would be a serious loss to him. On December 28 he (Mr. Brogden) wrote to the defendant with the view of recovering 30*l.*, the remaining half of the premium, which the indenture provided should be paid on June 6, 1889. This had not been paid, and the boy had not returned. Besides the 30*l.* plaintiff claimed 20*l.* for damages. Plaintiff, on being called, said he had expended 12*l.* 0*s.* 8*d.* altogether in consequence of the boy staying away from business. The bad language complained of was used when a box fell on to his foot in the yard. Cross-examined by Mr. Porter, plaintiff said the difference between 12*l.* 0*s.* 8*d.* and 20*l.* was for loss of business and extra labour caused to himself. He did not remember that he called the defendant's boy "fat head," "idiot," or "silly chump." Plaintiff was further questioned to show that defendant had taken the boy away because plaintiff failed to find a separate room for him. Fred. Wildman, another apprentice with Mr. Birkbeck, said plaintiff took pains to teach the boy Boulton, who on one occasion called witness a bad name. He once heard plaintiff ask the boy where his eyes were, and Boulton replied "In my head." Mr. Porter, in defence, contended that Mr. Boulton was justified in removing his son at the time he did. He had received a letter from an assistant of the plaintiff, containing an accusation against his son. He then decided he would not allow his son to sleep in plaintiff's house unless a separate bedroom could be found for him. Mr. Boulton had 350 boys under his charge, and would not be likely to make any frivolous complaint. The food was not satisfactory either as regarded quantity or quality; the boy had no comfort in his life, which was rendered perfectly miserable, and it was a wonder that he stayed so long considering the persistent persecution which was extended towards him. His average hours for the week were 82. There was an entire absence of teaching on the part of Mr. Birkbeck. In November of last year Mr. Boulton received a letter from Hatfield which contained a most serious charge against his son, and it was in consequence of that accusation that he withdrew his son. On receiving that letter Mr. Boulton went straight to Mr. Birkbeck and showed him the letter. A serious crime was alleged to have been committed in Birkbeck's house, and he refused to take any steps to test the accuracy or otherwise of the charge, even though he told them he believed the charge to be true. Mr. Boulton was astounded when he found that nothing was to be done, and he did what was the least he could do under the circumstances. He insisted that a separate bedroom should be provided for his son, and that until that was provided his son should not sleep at Mr. Birkbeck's. Mr. Boulton's son slept at home for a month, and then it was understood separate accommodation had been provided, but this turned out to be in the nature of a

separate bed in the same room as Hatfield, and Mr. Boulton would not allow his son to remain longer. It was because his boy's health and reputation were in peril that Mr. Boulton took that extreme course. With regard to the alleged bad language, no evidence had been given to show anything of the kind had taken place. Mr. Boulton and the boy were called, both of whom said that the latter had discomforts to contend against, and that the charge contained in the letter of the assistant was entirely false. Several witnesses were called, and after an absence of about an hour and a half the jury returned, and inquired if they considered the father was justified in taking the boy away would the indenture be cancelled? His Honour replied that that would not cancel the indenture so far as the 30*l.* balance was concerned. The jury again retired, and returned saying that they found a verdict for the plaintiff on the claim for 20*l.* As it transpired that the counter-claim had not received consideration, the jury retired a third time to deliberate. They ultimately gave a verdict for the plaintiff for 42*l.* 10*s.*, and a verdict for defendant on the counter-claim for 20*l.* His Honour observed that it virtually amounted to a verdict for the plaintiff for 22*l.* 10*s.*

SUING THE WRONG MAN.

In the City of London Court, on September 13, before Mr. Registrar Wild, Jeyes' Sanitary Compound Company (Limited) sued Mr. F. White, chemist, of 157 Commercial Road, to recover 16*s.* balance on an account for goods sold and delivered. The defendant said that he formerly carried on business as a chemist under the style of F. White & Son. He sold that business, however, in October, 1887, to one Thomas, and the goods sued for had been supplied since that date. As a matter of fact he knew nothing whatever of the claim, and this was only one of a great number of cases in which he had been wrongfully applied to for payment of debts. Cross-examined, he said that when he left the shop in 1887 he did not leave it in the charge of a manager, nor did he give anyone authority to sign the order produced. The plaintiffs' representative said that the order was taken in the usual way, the traveller being under the impression that the person giving it him was the defendant's manager. His firm had never had any notification of the business having been transferred. The Registrar said it was not the defendant's duty to give them notice. The defendant: It is not likely that I can go to all the wholesale houses in London and give them notice that I have sold my business. The Registrar found for the defendant.

BANKRUPTCY REPORTS.

Re EDWIN ALEWOOD, 66 Wind Street, Swansea, Chemist and Druggist.

THIS debtor filed his own petition in the Swansea court on August 23, and the first meeting of his creditors was held at the London Bankruptcy Buildings on Friday, before Mr. Thomas Thomas, the Swansea Official Receiver. The accounts show unsecured creditors, 805*l.* 10*s.* 10*d.*; a partly secured creditor, claiming 100*l.*, and holding security valued at 50*l.*; and preferential creditors, 196*l.* 9*s.* 8*d.*, making a total indebtedness of 1,102*l.* 0*s.* 6*d.*, of which 855*l.* 10*s.* 10*d.* is expected to rank against the estate for dividend. The assets are valued at 429*l.* 18*s.* 5*d.*, and consist of stock costing 305*l.* 7*s.* 9*d.*, machinery, fixtures, fittings, &c., 90*l.*, and furniture, 62*l.* 15*s.*, together estimated to produce 383*l.* 2*s.* 9*d.*; good book debts, 41*l.* 5*s.* 8*d.*, and doubtful and bad debts valued at 5*l.* 10*s.* After deducting the preferential claims there is an estimated sum of 233*l.* 8*s.* 9*d.* available assets, and the deficiency is consequently returned at 622*l.* 2*s.* 1*d.* The debtor started business in June, 1852, with a capital of about 600*l.* He was at one time in partnership with Mr. John Morgan, but that was dissolved in 1857. During the last six years he has traded at 66 Wind Street alone, and he attributes his failure to an illness and the consequent absence from his business, to losses by shipping transactions, and general competition. The deficiency account shows an excess of liabilities over assets at August

1888, 153*l.* 2*s.* 11*d.*, a net loss of 8*l.* 19*s.* 2*d.* on the trading since that date, household expenses during the same period 105*l.*, and costs of numerous writs and processes issued by wholesale houses 75*l.* The following are the principal creditors:—

Unsecured.

	£	s.	d.
Allen & Sons, Poplar	14	3	6
Ayscough, Thompson & Son, Worship Street	11	13	0
Barron, Harveys & Co., Giltspur Street	32	0	0
Barron, Squire & Co., Bush Lane	27	5	10
Crown Perfumery Company, Old Bailey	14	3	4
Crooke & Babraham, Birmingham	15	19	7
Clements, C., Swansea	17	14	0
Cavalier Sazera, Bobemia	50	0	0
Evans, Lescher & Webb, Bartholomew Close	11	13	3
Fox, F. F., Bristol	17	7	0
Grossmith, Son & Co., Newgate Street	18	11	6
Grenier, J. & F., Stutzerlach	39	14	0
Hodgkinson, Prestons & King, Duke Street	14	9	4
Hodgkinsons, Treacher & Clarke, Upper Whitecross Street	23	10	10
Hopkin & Williams, 16 Cross Street, Hatton Garden	31	12	4
Kent & Co., Great Marlborough Street	11	14	5
Langton, Edden, Hicks & Clarke, Upper Thames Street	20	5	0
McNair, —, Glasgow	10	0	0
Maw, Son & Thompson, Aldersgate Street	13	16	3
Richardson & Co., Leicester	10	16	4
Southall Brothers & Barclay, Birmingham	10	16	6
Tomson & Mercer, Bishopsgate Street	16	18	11
Trades Commercial Bank (Limited)	40	0	0
Thurgood, R. R., Swansea	43	6	
White & Son, Saffron Hill	19	15	0
Wright, Layman & Umney, Southwark Street	14	8	11
York Glass Company (Limited), York	18	5	2

Partly Secured.

Wilson, T., Swansea	100	0	0
(Estimated value of security, 50 <i>l.</i>)			

Preferential.

Wilson, T., Swansea	172	10	0
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The chairman having called over the proofs that had been tendered, said he had tried to get the best offer from the debtor, and as a result had that morning received a telegram from the debtor's solicitor, offering a composition of 5*s.* in the pound to be satisfactorily secured, and payment to be made at three months' from its acceptance. It appeared to him, looking at the statement of affairs, that a larger sum would be obtained if the estate were to be wound up in bankruptcy, and therefore he could not recommend the meeting to accept that amount. The debtor had two leases of the premises, and had deposited them, together with certain articles of jewellery, with Mr. Wilson, the landlord, as part security for that gentleman's claim for arrears of rent. He was informed that the jewellery alone was worth 50*l.*, and, therefore, no value had been set upon the leases; but inasmuch as the business was being carried on the latter were surely of some value, and the assets could thereby be increased. So far as he could judge the assets would realise sufficient to pay a sum of 8*s.* in the pound upon the liabilities. The debtor was then examined respecting his past transactions, a creditor complaining that on August 3 the debtor wrote stating he would pay his account as soon as possible, and at the same time ordered further goods to be supplied. It was, therefore, contended that the debtor must have known at the time his insolvent condition. The latter, in reply, said he ordered the goods in good faith, believing he would be able to meet all his engagements as they fell due. With respect to the composition offer, he would increase the amount to six shillings, which was as much as the estate would yield as a going concern. The chairman explained that a valuer had taken stock with the help of the assistant in the shop; the cost price of the goods had been taken, and a discount allowed from the total sum. The said assistant had been appointed by the Court as caretaker, so that the business might be carried on as usual, and thus prevent any damage resulting from the present proceedings. After some further discussion it was decided to adjourn the meeting for a week to enable the debtor to further increase his offer, the creditors intimating their willingness to accept 7*s.* 6*d.* in the pound, to be paid in

two equal instalments at four and eight months, and, failing that, the estate to be wound up in bankruptcy in the usual manner.

Re ALFRED PRINCE PRESTON, Middlesbrough, Chemist and Druggist.

At the Stockton Bankruptcy Court on Wednesday, this debtor was examined. His accounts showed unsecured liabilities, 563*l.* 9*s.* 8*d.* and assets 200*l.* 14*s.* 3*d.* He commenced business at Abingdon in 1870 without capital. He afterwards engaged in other businesses, borrowing money for the purpose. He now attributed his insolvency to bad trade and heavy interest on borrowed money. Practically he had never been solvent since he commenced business in Middlesbrough. He liquidated by arrangement before he came to Middlesbrough, owing at the time 1,880*l.* 2*s.* 9*d.*, and his net assets amounted to 374*l.* 19*s.* 8*d.* The debtor was examined for a creditor by Mr. W. Tennant, accountant, Middlesbrough. He said he borrowed 20*l.* from Mr. Eaton, and pledged two cases of plated goods. He was secretary to the Conservative Club, and temporarily used the club's money, but he denied that he paid 60*l.* or 70*l.* into the bank after a meeting of the club committee. He settled with the club. The examination was adjourned.

Gazette.

PARTNERSHIPS DISSOLVED.

Grayston & Osborn, York, surgeon dentist.
Herbison, W. J., & Co., Birkenhead, mineral-water manufacturers.
Pyrah & Halliday, Bradford, mineral-water manufacturers.

THE BANKRUPTCY ACT, 1883.

FIRST MEETINGS AND PUBLIC EXAMINATIONS.

Black, Walter Shaw, Bedale, surgeon—first meeting, Sept. 23, Court House, Northallerton; public examination, Sept. 23, Court House, Northallerton.
Burton, William, Bucklersbury, City, and Grote's Buildings, Blackheath, physician—Oct. 15, 33 Carey Street, Lincoln's Inn Fields; Oct. 17, 34 Lincoln's Inn Fields.
McDonagh, James Samuel, Clement's Inn, Strand, and Bloemfontein, Forest Road, Chingford, late of Colosseum Terrace, Regent's Park, doctor of medicine and surgeon, and commission agent—Oct. 2, 33 Carey Street, Lincoln's Inn Fields; Oct. 15, 34 Lincoln's Inn Fields.
Preston, Alfred Prince, late of Middlesbrough and Maske-by-the-Sea, chemist and druggist—Oct. 1, Official Receiver's office, Middlesbrough; Sept. 18, Court House, Stockton-on-Tees.

ADJUDICATIONS.

Black, Walter Shaw, Bedale, surgeon.
May, George Thomas, Tunstall, surgeon.

NOTICES OF DIVIDENDS.

Abbott, John, Nottingham, chemist—first and final div. of 1*s.* 5½*d.*, Sept. 23, Official Receiver's offices, Nottingham.
Adams, Charles, Colyton, late of St. Mary Church, chemist, late fancy stationer—first and final div. of 1*s.* 4*d.*, Sept. 20, Official Receiver's office, Exeter.
Belshaw, Robert, Nottingham, late arctic fleecy hosiery and elastic surgical hosiery manufacturer, now out of business—first and final div. of 9½*d.*, Sept. 25, Official Receiver's offices, Nottingham.
Clark, Charles Francis George, jun. (trading as C. F. G. Clark & Son), Dudley, wholesale chemist and druggist—first and final div. of 7*d.*, Sept. 27, 263 Castle Street, Dudley.
How, William, Upwey, late of Dorchester, chemist and druggist—first and final div. of 3*s.* 7½*d.*, Sept. 16, Official Receiver's offices, Salisbury.
Leslie, Louis Gordon, Tenby, doctor of medicine—first and final div. of 9½*d.*, Sept. 25, Official Receiver's offices, Carmarthen.

ORDER MADE ON APPLICATION FOR DISCHARGE.

Reid, Alexander, sen., Reid, Alexander, jun., and Reid, Thomas, Radcliffe, chemical manufacturers—discharge suspended for six months.

IRISH BANKRUPT.

(From the *Dublin Gazette*.)

Hanbury, William (trading as Wheeler & Whitaker), of 37 High Street, in the City of Belfast, chemist, was on September 4, 1889, adjudged bankrupt.

SOME CINCHONA STATISTICS.

MESSRS. LEWIS & PEAT have issued a circular on cinchona, from which we take the following:—

The total supply shows a falling off of 10 per cent., but as the average percentage of quinine was less than previous years, the actual reduction is greater. The continuous reduction from Ceylon since 1885-6 is very marked, and we are told will continue.

Quantity (in pounds) offered since January 1 to date in London auctions:—

—	Ceylon	East India	Java	Total
1889 ..	6 400,769	2,248,490	372,310	9 021,569
1888 ..	8,021,040	1,478,740	306,100	9,805,880
1887 ..	8,917,793	1,359,893	359,730	10,637,410
1886 ..	9,457,762	702,614	331,477	10,491,853
1885 ..	7,890,702	496,738	96,659	8,482,099

Since September, 1888, the sales of cinchona bark in London show the following results:—

—	Sept., 1888, to Sept., 1889	Sept., 1887, to Sept., 1888
	lbs.	lbs.
Sold at 3d. per lb. and under ..	3,403,633	2,547,827
" 3d. " to 6d. per lb. ..	3,519,660	4,272,710
" 6d. " to 1s. ..	1,157,500	1,920,070
" over 1s. per lb. ..	13,900	122,480
Total	8,094,750	8,869,080

There has been a large and regular consumption of both bark and quinine. The deliveries show some increase, and large lots of old quinine were taken delivery of during the year, and we think stocks now are less than the last few years. The largest makers are now under large contracts for over six months ahead, and unless importers and weak quinine holders help them, they may find it difficult to buy bark at a price to make the quinine at a profit. Published accounts of more than one large Continental factory show a loss on last year's working. The unit was nearly down to 1d. (1d. to 1½d.), but the last large Dutch and London sales went firmly at 1½d. per unit. Even this is shown to be quite unremunerative to growers and shippers. We have had very small odd lots from Central America, but some odd lots of Cuprea were disposed of at low prices during the year.

The imports from Ceylon have been well packed, but a very large portion of inferior quality, the average percentage being 2½ per cent. of sulphate, as against 2½ per cent. in 1887-8. The supply from Java has not increased as much as was expected, but the average percentage has been about the same as the previous year, viz., 4 per cent. India has sent us much more, mainly from the Wynaad and Neilgherries, but a large part was poor quality, and the average percentage was barely 2 per cent. of sulphate, against 2½ per cent. in 1887-8. Most of the Darjeeling bark, about 290,000 lbs., was manufactured in India, but with very disastrous results as compared with the price quinine was procurable at in Europe.

The total exports from India are given as gross:—1888-9, 3,074,000 lbs.; 1887-8, 1,450,000 lbs.; 1886-7, 1,250,000 lbs.

Central America has sent scarcely any new lots, and most of the old stocks are held high.

Bolivia has sent again a fair supply of rich cultivated bark (but the packages were very small), averaging nearly 4½ per cent. of sulphate, as in previous year.

Odd small lots came from Africa (St. Thomas) and West Indies. We hear a few trees were planted in Central Africa.

The consumption of quinine has increased, but too much has been manufactured of late years, though the centre of stocks of both bark and sulphate is London, the available stocks abroad and in America being insignificant.

In the annexed statistics the stocks are given as published. Our investigations of the leading holders and importers lead us to believe the quantity of East India and Ceylon bark

in London is very much below the quantity printed, for we cannot trace that importers hold within 8,000 packages of the returned quantity. We do not believe any large quantity of East India or Ceylon bark is in second hands.

—	Arrivals from Ceylon and all the East Indies	Sales of Ceylon in Auction Rooms	Highest and Lowest Price of the Unit (per lb.)	Highest and Lowest Price for German Quinine Sulphate (per oz.)
	Packages	Packages	Pence	s. d. s. d.
Sept., 1886-Nov., 1885 ..	13,011	12,488	3½ to 3	1 11 to 2 3
Dec., 1886-Feb., 1887 ..	13,782	11,639	3½ —	2 4 " 2 3
March, 1887-May, 1887 ..	17,747	10,192	3½ " 3	2 2 " 2 0
June, 1887-Aug., 1887 ..	15,433	9,706	2½ " 2	2 0 " 1 7
Sept., 1887-Nov., 1887 ..	12,450	8,302	1½ " 2	1 4 " 1 10
Dec., 1887-Feb., 1888 ..	13,110	7,969	2½ " 3	2 2 " 1 9
March, 1888-May, 1888 ..	16,618	7,093	2 " 2½	1 10½ " 1 4
June, 1888-Aug., 1888 ..	13,323	9,941	2 " 2½	1 3½ " 1 5
Sept., 1888-Nov., 1888 ..	14,931	10,350	2 " 2½	1 3 " 1 7
Dec., 1888-Feb., 1889 ..	16,857	7,690	1½ " 2	1 2½ " 1 4½
March, 1889-May, 1889 ..	18,860	7,504	1½ " 1½	0 11½ " 1 2½
June, 1889-Aug., 1889 ..	8,466	6,918	1½ " 1½	0 11½ " 1 2½

Weight of East India bark offered at the auctions, and mostly sold then or afterwards:—

—	Ceylon	India	Java	Total
	lbs.	lbs.	lbs.	lbs.
Sept. 1, 1886, to Aug. 31, 1887	10,163,761	2,813,320	1,688,520	13,545,600
" 1887, " " 1888	11,542,520	1,758,680	524,210	13,825,410
" 1888, " " 1889	13,230,780	1,406,830	593,642	15,429,252
Total	31,937,060	6,176,830	1,866,372	42,800,262

Published stock of all cinchona bark, Ceylon, India, Java, America, &c., on September 1 of each year:—

—	1887	1888	1889
Total packages*	61,390	61,095	61,283
Estimated proportion of Asiatic barks	26,867	24,094	19,078
Ditto by weight at 240 lbs. each	6,448,400	5,782,160	4,578,720
Ditto of American barks	34,523	37,001	42,205
Ditto by weight at 133 lbs. each	4,591,559	4,921,133	5,613,265

* But we can only trace importers as holding about 16,000 packages, or, say, 4,000,000 lbs., and if there is such a stock as the printed returns give a large proportion of all descriptions must be of very inferior quality and hardly to be taken into account for the manufacture of quinine.

NOTES ON THE GERMAN DRUG TRADE.

(From Messrs. Gehe & Co.'s Semi-annual Circular.)

WHILE German trade in general has had a fairly prosperous year in 1888, the drug and chemical industries have been touched by the general improvement to a very slight extent only. The imports of articles for use of the chemical industry and of pharmacy show a total of 243 millions of marks in 1888, against 219 millions in 1887, i.e. an increase of 24 millions of marks; and if the average values of 1887 had been maintained there would have been exactly the same result, so that all the advances and declines of the year have neutralised one another. The exports in the same category have been—in 1888, 236 millions of marks, against 226 millions in 1887. If the average prices of 1887 had also been maintained in this department, there would have been an increase of 17 millions, instead of 10 millions. The moral of these figures is that, while the Germans paid the same average prices for what they bought from abroad in 1888 as in 1887, they have had to sell their own products to the foreigner at a slight reduction.

ARAROA.—The collection has kept pace with the increased consumption, and the present values, which have only given a loss to the importers, have not yet experienced an improvement. On August 1 there were about 80 packages in the

first hand in Hamburg, but the quality was not particularly good, but mostly very damp and poor in chrysarobin.

BALSAM OF PERU.—Hamburg, which continues to be the principal market for Peruvian balsam, has constantly received considerable arrivals, which have depressed the value of the article, and slowly caused further slight reductions. The San Salvador exporters unanimously say that with the present market value the production is no longer remunerative, and that the shipment must very speedily fall off. If this should be correct, the moment will have arrived for manifesting more interest in the article, and to think of covering the requirements largely. In addition to our former communications on Kremel's test for Peruvian balsam we may now say that our opinion of that test remains unchanged, although we have now examined over 100 samples of different imports. No definite relation exists between the point of acidification and the ester point; the former is subject to great fluctuations. The point of saponification of genuine balsam is not below 270°. Quite recently balsam of Peru has again been recommended as a remedy for tuberculosis, to be taken internally, but its efficacy is already denied in many quarters. This may also cause the proposal to replace the balsam by a mixture of its two active principles, cinnamoin and cinnamic acid, to fall to the ground. The preparation of such a mixture would not be difficult, as cinnamoin, directly obtained from the balsam, is already commercially obtainable under the name of oil of Peruvian balsam.

CASTOREUM.—The London Hudson's Bay Company is at present quite without stock of Canadian castoreum, and, being also without information of any shipments from North America, it may be taken for granted that no auction will be held until the middle of December, the usual summer auction having also fallen out. What remained of the December and February auctions is also mostly consumed; second quality is altogether wanting, and if small private consignments do not arrive from America soon, good quality may not be obtainable for the next few months without difficulty, and at a considerably increased price.

CUBEBS.—All parcels of cubebs which have been brought to market thus far have easily found purchasers. Truly fine natural cubebs, such as were formerly met with, are rare now. Most parcels are mixtures of fruit in all grades of maturity, and the following four types may, as a rule, be easily separated:—(a) Small, unsightly, very shrivelled fruit, scarcely 2 mm. in diameter, greyish-brown to greyish-black, gathered in the first stage of maturity. The stalk is one-and-a-half times or twice as long as the fruit, the seed is shrivelled, and often scarcely perceptible. (b) Grey-black fruit, 4 to 4½ mm. in diameter, closely but not very deeply shrivelled; stalk of equal length or half as long again as the fruit; seed partly developed and round (in that case fixed to the base), brown externally, greyish-yellow internally, of horny appearance towards the rim, or sometimes shrivelled and, if so, of a browner colour. (c) Fruit of 5 mm. or more in diameter, stalk 5 to 7 mm. in length, colour greyish-brown, lines deeper and not so numerous; seeds generally fully developed, ball-shaped, pale brown, internally yellowish-white, often starchy, rarely horny. (d) Besides these three varieties, most parcels contain from 5 to 10 per cent. of yellowish-brown fruit, covered with a corky layer which peels off easily. The outer shell of the fruit is weak, and yields to pressure by the finger; the seed is imperfectly developed, adhering at the base in a somewhat shapeless mass. These fruits also appear to be genuine, but to have been arrested in their development by fungus or climatic action. These four varieties may be considered genuine, but spurious fruit also occurs as an admixture. This may be detected by the fact that the seed firmly adheres to the inner coating of the shell. Sometimes the fruit is round and without stalk, sometimes pear-shaped and stalky. The parcels which contain a large proportion of the fruit described under (b) are specially to be recommended for pharmaceutical purposes.

GALBANUM has again been absent from the market this season. A small parcel obtained from Russia showed an unsatisfactory quality. Nothing is heard of arrivals from Persia.

LITHIA SALTS.—The general position of lithia salts remains much the same; the heavy supply of French lithium,

in spite of its highly impure condition, weighs down the price of the article, and prevents the superior German article from getting its due. The demand for lithia salts has been weak, owing to absence of American orders. Bromide and iodide of lithia, however, have been in better request than usual.

ORANGE AND LEMON PEEL.—The new crop of Malaga peel has been a very good one indeed, and prices are exceptionally low. But the consumption has steadily increased of recent years, the West Indian peel being preferred by distillers because of its cheapness and greater proportion of oil.

Trade Notes.

MESSRS. CASSIE & Co., of 49 Newgate Street, E.C., have acquired the books and dispensing connection of Messrs. Butler & Crispe, corner of St. Paul's Churchyard.

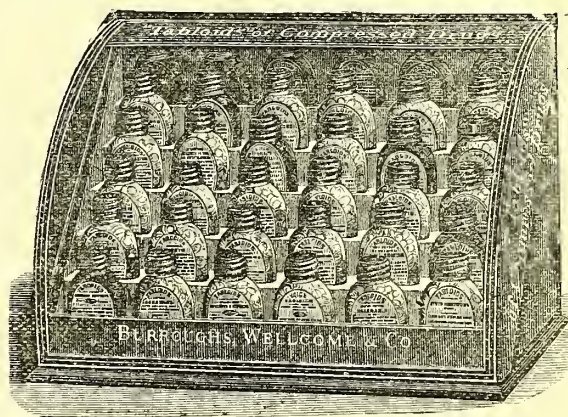
MESSRS. BEEDZLER & Co., of Norton Folgate, tell us they are now going to press with the tenth 100,000 of their catalogue and price-list, making 1,000,000 of these they will have issued.

A RECENTLY-PUBLISHED work, entitled "The Industries of London," contains an account of Messrs. Stevenson & Howell's laboratories for the production of fruit essences, colourings for confectioners, and distilled oils. The account is illustrated with a sketch of the factory of the firm.

MR. HERMANN BUCHLER, of Dunster House, Mincing Lane, E.C., announces that his connection with the firm of Hermann Buchler (Brunswick Quinine Works) ceased on September 16, and that the business will in future be carried on entirely and solely by his son, Mr. Paul Buchler, at the same address, and under the old style.

INVESTORS who lost their money over "Hop Bitters"—and not a few did—will speedily have a chance given them to get it back or lose more. Warner's proprietary medicines are, it is rumoured, to be made the subject of a "joint-stock," and a million sterling is the price which Mr. H. H. Warner has placed upon his business. For this trifling sum Mr. Warner kindly agrees to hand over to a British syndicate his proprietary medicines, his yeast business, and his safe manufactory. Money, it is stated, has been paid down to bind the bargain.—*Financial Times*. [Dollars are probably meant.—ED.]

THE engraving shows a new and superior counter showcase which Messrs. Burroughs, Wellcome & Co. are now supplying with orders for three dozen oval bottles of tabloids. This brings these popular pocket medicines very effectively before customers, and is calculated to induce a spread of the habit of taking occasional correctives, &c. From the same



firm we have specimens of the new edition of their little pocket-books of prescription-blanks, for sale or presentation to local doctors as a delicate hint to them to abandon the dispensing part of their practice. Each book is prettily bound, and now contains fifty blanks, with a carbon block and tissue duplicates, so that copies can be retained. These books are supplied to chemists for 2s. a dozen.

Trade Report.

Notice to Retail Buyers:—It should be remembered that the quotations in this section are invariably the lowest net cash prices actually paid for large quantities in bulk. In many cases allowances have to be added before ordinary prices can be ascertained. Frequently goods must be picked and sorted to suit the demands of the retail trade, causing much labour and the accumulation of rejections, not all of which are suitable, even for manufacturing purposes.

It should also be recollected that for many articles the range of quality is very wide.

42 CANNON STREET, E.C., September 19.

THE week under review has again been a quiet one in the drug and chemical markets, though it is hoped that the cessation of the strike and the approach of autumn will soon bring about a more satisfactory state of things. The drug sales to-day were very short, but dragged along slowly, and offered very little of any interest. The principal changes in the market may be summed up as follows:—In drugs, ambergris is again quoted dearer, while for raw camphor, cascara sagrada, Russian cantharides, ergot of rye, golden seal root, senega, castor and anise oils and saffron higher or very full prices are asked. Opium reports come very excited from Smyrna to-day, and may, if confirmed, influence the price of morphia, which as yet is unchanged. On the other hand, we can quote lower rates for chamomiles, copaiba, cubebs, gum benjamin, myrrh, Jamaica honey, and ipecacuanha. The new crop of valerian root is offering at lower rates, and lycopodium is also cheaper. Musk and cardamoms unchanged but weak. Vanilla sold steadily to-day, but most of the supply was second-hand stuff reshipped from Hamburg. Ipecacuanha decidedly lower. Olive oil tending higher, owing to unfavourable crop prospects. In the chemical market camphor and morphia, though still as yet unchanged, are not unlikely to become stiffer. Citric and tartaric acids and cream of tartar are very dull; quicksilver and quinine easier. In drysalteries, &c., there is not much change. At the weekly auctions shellac was decidedly lower, but it has since more or less recovered. Gambier and Cochin ginger easier; turmeric dearer.

THE MERCHANDISE MARKS ACT.—Some time ago legislation of the character analogous to the Merchandise Marks Act now in force in this country came into force in British India, and since then the Colonial Office has also been urging upon those parts of the British Empire which possess local legislatures to pass a similar measure. From a paper just issued by the Colonial Office it appears that this intercession has been attended with considerable success, the colonies and dependencies which have adopted Merchandise Marks Acts being:—Canada, Newfoundland, Jamaica, Turks Islands, British Honduras, British Guiana, Trinidad, Tobago, St. Vincent, St. Lucia, Falkland Islands, St. Helena, Cape of Good Hope, Natal, Sierra Leone, Gold Coast, Lagos, Gambia, Gibraltar, Ceylon, Mauritius, and the Straits Settlements. Bills have been introduced or are promised by Victoria, Queensland, Tasmania, South Australia, New Zealand, Bahamas, Barbadoes, Leeward Islands, Malta, and Hong Kong. The Fiji Islands and Heligoland consider the suggested legislation unnecessary. In Cyprus and Bermuda the legislative bodies have rejected the proposed bills, and New South Wales has not taken the trouble to reply to the letter from the Colonial Department.

SAMPLING CASCARILLA.—At to-day's drug sales the question of the sampling of cascarilla was again brought forward. Some months ago, as reported in THE CHEMIST AND DRUGGIST at the time, a resolution was adopted at the auctions that of every package of cascarilla offered for public sale a separate sample should be drawn, instead of, as had been the custom, showing only one sample to represent a whole lot. The reason for this step was the complaint by some of the exporters that cascarilla was frequently false packed, and that one sample was apt to show the lot too favourably, difficulties being afterwards the result. Messrs. Lewis & Peat to-day had a parcel to offer, and explained

that it cost 2s. 6d. to sample each bale, the value of the package being about 20s. This, Mr. Figgis said, was absurd, and they could not afford to go to such an expense. Cascarilla had been sold "for the last 500 years" on the old plan, and in the interests of the importers, whom he represented, he could not agree to the new system of sampling. Mr. Ziegele and Mr. Fred Barron protested that the resolution had been adopted in public sale, and that consequently Messrs. Lewis & Peat were as much bound by it as anyone else. Mr. Figgis rejoined that he was not in the room when that resolution—which he thought a very foolish one—was adopted. He had the interests of his importers to consider, and they should have a voice in such a matter. Ultimately the cascarilla was withdrawn, and the matter dropped.

ACIDS.—Citric very quiet at 1s. 3½d. per lb. nominally, though some was being offered to-day, we understand, at 1s. 3¼d. per lb. Oxalic neglected at 4½d. per lb. Tartaric flat and tending lower at 1s. 2¼d. to 1s. 2½d. per lb., according to brand. Benzoic ex resina is quoted at 4d. per oz., and from toluol at 1s. 4d. per lb. Salicylic, 5s. 1d. to 5s. 9d. per lb., according to quality and quantity.

ALOES.—Of Cape aloes nothing fine is offering, nor have any consignments been received by direct steamer. A few boxes catalogued for the auctions were bought in. Caracao aloes in fairly good supply, the quality being partly above the average of what has been offered recently: good red to fair brown liver sold at 65s. to 55s.; good bright Capey in small gourds, 42s. refused. Low coarse orange sold at 15s.; black overheated, 11s. per cwt.; glassy Capey, 24s. 6d. per cwt. The market for East Indian aloes remains dull, and very little of any importance was offered to-day. Sour flavoured soft red Zanzibar sold at 42s.; watery ditto, 21s. to 25s. per cwt.

ALUM has been more inquired for lately; lump, 4s. 9d. to 4s. 10½d., according to packing; ground, 5s. 6d. to 5s. 9d.

AMBERGRIS.—There appears to be only one parcel of fine ambergris offering at present, and that is held for the astounding price of 170s. per oz., 150s. having been refused for it at auction to-day. It is a solid lump of 40 oz. weight, of very fine quality, and would, at the price asked for it, cost about 370l. Of ordinary black undeveloped quality a tin sold to-day at 26s. per oz.

ANISE.—The new crop of Russian anise is of fairly good quality, and it realises from 2s. to 3s. per cwt. above last year's. Fair-flavoured old seed was sold at auction to-day at 18s. 6d. per cwt. Fair brownish Malta held at 25s., and good pale Spanish bought in at 32s. 6d. per cwt.

ANNATTO.—Dull of sale. Some good bright paste from Ceylon was bought in at 4d. per lb. Fifteen baskets dry Brazilian Roll also bought in at 9d. per lb.

ARAROA.—Twenty-four cases, forming part of the large lot which was recently landed, were again offered for sale to-day, and bought in at 2s. to 2s. 9d. per lb., according to quality. We understand that 2s. 6d. per lb. has been privately paid for fair dry quality.

ARSENIC.—Firmly held at 13s. 3d. to 13s. 6d. per cwt. for best white powder.

BALSAMS.—Canada quoted at 1s. 6d. per lb., London terms. Copaiba quiet and freely offered. At the sales to-day only 1 lot, which has been more than once offered, was shown and bought in. Peru nominally 4s. per lb.

BENZOL steady at the recent reductions; 90-per-cent., 3s. 1d. to 3s. 2d.; 50-per-cent., 2s. 4d.

BLEACHING-POWDER.—London, 7l. 15s. to 8l.; Tyne, 20s. less. The existing agreement among the manufacturers on the Tyne expires at the end of the year, and at a recent meeting it was decided that at present it is impracticable to renew it.

BORAX firmly held at 28s. to 30s. per cwt., according to brand and position.

CAFFEINE.—The pure alkaloid is quoted at 8s. to 8s. 6d. per lb., according to brand and quality; and the citrate, according to make, at 7s. to 7s. 6d. for B.P.

CALUMBA.—Market remains very quiet. At auction to-

day one fine lot of 14 bags sound bright yellow washed was offered. The owner asks 40s., but 35s. would probably buy. Another lot of dark mixed sizes, rather wormy, sold at 10s. 6d. to 11s. per cwt.

CAMPBOR (RAW).—Further business took place early this week at 102s. 6d. to 105s. per cwt. c.i.f., delivered weights, for several parcels of Japan camphor, from near at hand to September-October shipment. On the spot 105s. has also been paid, but we doubt whether any further lots could be secured at that figure. Reports from Hong Kong, dated August 10, state that the arrivals of Japan and Formosa camphor, together about 460 piculs, which had arrived since the clearing of the market, have been promptly bought up.

CAMPBOR (REFINED).—The makers and foreign agents still quote from 1s. 2½d. to 1s. 3¼d. per lb., according to quality and brand; but if the crude article maintains its price another ½d. will probably be put on the refined camphor.

CANTHARIDES.—Good new *Russian* flies are said to have been sold at 3s. 8d. per lb. "c.i.f.," and are quoted by different holders at 3s. 9d. to 4s. landed terms. No *China* cantharides were offered at to-day's auctions.

CARAWAY SEED.—Business moves in a very limited compass, and prices are kept down owing to largeness of the supply. New *Dutch* caraways, 20s.; *Russian*, 17s. to 18s.

CARDAMOMS.—Less than 80 packages were offered to-day, and they did not include anything of particular interest, being mostly second-hand or London bleached lots. From the prices of the few packages sold, no inference as to the state of the market can be drawn, but there were very few orders, and prices tended generally easier. *Mysore* medium to bold fine pale sold at 2s. 10d. to 2s. 11d., while for small ditto, 1s. 10d. was refused; good boldish but split and brown mixed sold at 1s. 7d. per lb. "subject," and brownish wild Ceylon at 6d. per lb. The exports from Ceylon in the period between October 1 and August 22 have been:—1888-9, 263,575 lbs.; 1887-8, 290,057 lbs.; 1886-7, 302,066 lbs.; 1885-6, 220,178 lbs.

CASCARA SAGRADA.—Three bales good thin bark were sold at 8d. per lb. at auction to day. For forward delivery up to 75s. c.i.f. is now wanted, though we have not yet heard of business at those terms.

CASCARILLA.—One or two lots of apparently good silvery quality were shown, but bought in at nominal figures.

CHAMOMILES.—The price is still falling for *Belgian* flowers, but the quality of recent shipments is said to show a falling off. Best pale flowers are quoted at 37s. 6d. to 40s.; second pickings at 29s. to 33s. per cwt.

CINCHONA.—At to-day's auctions a rather large quantity of South American crown barks was offered and mostly sold. Genuine *Lora*, good bright mossy quill, 1s. 8d.; ditto, rather mouldy flavour, 1s. 5d. to 1s. 7d. *Huanoco* of usual quality, 8d. to 9½d. Fair *Guayaquil*, 7d. per lb. For two lots of good bright *Maracaibo* holders ask from 7d. to 9d. per lb. Our imports of bark from all quarters since the last report have been 2,846 packages. The following are the shipments relating to the exports from Ceylon between October 1 and August 22:—1888-9, 9,706,060 lbs.; 1887-8, 10,708,110 lbs.; 1886-7, 13,203,422 lbs.; 1885-6, 14,408,297 lbs.

COCAINE.—The price varies from 15s. to 16s. 6d. per oz. Messrs. Böhringer & Co. point out that, although the coca leaves in South America have risen 10 to 20 per cent. in value, crude cocaine is nevertheless offered at a lower price. The reason of this contradiction is that, notwithstanding previous evil experience, somebody has again found himself induced to take up the manufacture, and his product at present weighs down the market. The bold man in question probably already regrets his enterprise, for under present conditions there can be no profit whatever in the production of cocaine. On the other hand, it is reported that one of the older makers has ceased the manufacture, or intends doing so; this rumour, however, needs confirmation.

COLOCYNTH.—For usual quality of peeled Turkey 1s. 4d. per lb. is wanted.

CONDURANGO.—Forty-one bags, fair partly woody bark, of new import all more or less damaged sold at 8½d. to 9d. per lb.

COPPER SULPHATE.—On the spot 21l. 10s. is quoted.

CREAM OF TARTAR very neglected at 89s. 6d. to 90s. per cwt. for first French crystals.

CUBES.—Three bags genuine berries, somewhat mixed and stalky, were sold to-day at 23l. per cwt., rather a lower price than was quoted until now. Another similar lot was bought in at 24l. per cwt.

CUMIN SEED.—Old brownish *Malta* seed of fair flavour sold at 21s. 6d. per cwt. to-day. The demand is much better, especially for seed of the new crop.

DAMIANA.—Four 2-cwt. bags of very broken stalky and yellow leaves were bought in without mention of price.

DRAGONS BLOOD.—The market remains rather flat, and at auction to-day only low offers were made, and mostly refused. A lot of fairly good bright saucers brought 6l. 15s. per cwt. For *Socotrine* dragons blood in fairly good tears 82s. 6d. was paid; 63s. 6d. for siftings; and 25s. for blocky dust. We quote fine bright fiery red lump at 7l. 15s. to 8l.; fair to good ditto from 5l. to 7l.

ERGOT OF RYE.—Although several small shipments have come to hand lately, and a rather large quantity was offered at sale to-day, prices keep up well, and holders show themselves very firm. Fine bold sound *Spanish* sold at 1s. 7d. per lb.; but for another parcel that price was refused. Fair sifted is held at 1s. 6d. per lb., and common wormy at 1s. 3d. per lb. Thin *Russian* bought in at 1s. 4d. per lb.

FENNEL SEED.—For 52 bags fair quality, imported *viâ* Marseilles, 20s. per cwt. is asked.

GALLS.—*Turkey* galls are steady, with a good inquiry for green Bassorah at 47s. 6d. to 50s. per cwt.; blues firm at 54s. to 55s.; whites, 42s. 6d. to 45s. per cwt. The demand for blue galls has fallen off as compared with a few weeks ago.

GAMBIER.—The market remained firm early in the week, and further business was reported on Monday at the same prices as those at which last week's trade closed: August-September, 29s.; September-October, 28s. 6d. per cwt. But since then the market has fallen, and sales have been made at 30s. 3d. spot, 28s. 9d. August-September, 28s. September-October, and 27s. 9d. November-December.

GAMBOGE.—Several parcels were shown at auction to-day and sold with fair demand at prices rather in buyers' favour. Good detached orange pipe, good fracture, 10l. 17s. 6d. to 11l.; slightly damp and cakey pipe, reddish fracture, 10l. 5s. to 10l. 10s.; pickings, rather dull, mixed, 9l. 10s. to 9l. 12s. 6d.; ordinary drossy cakey ditto at 9l. 5s. per cwt.

GENTIAN ROOT is held at 16s. 6d. per cwt.

GLYCERINE.—The discussion at the Newcastle Pharmaceutical Conference on the presence of arsenic in foreign glycerine has led some of the Continental makers to quote double-distilled, guaranteed free from arsenic, for which about 5s. more is asked than for the usual double-distilled 1,260, which is quoted at 63s. up to 67s. per cwt.

GOLDEN SEAL.—Prices in America are tending higher; 1s. 10d. per lb. is the nearest price.

GUARANA.—3s. 9d. per lb. is still asked.

GUM ARABIC.—*Senegal* and *Mogadore* gums have been very quiet this week. At auction a lot of sifted glassy *Senegal* was bought in at 5l. 5s. per cwt. *Turkey* gums very dear and scarce, fair white gum from Trieste, pea size, 15l. 10s. to 15l. 15s. per cwt. *Australian*: rather dark mixed glassy drops, sold at 39s. 6d.; block at 25s. per cwt. From Liverpool a demand for *Egyptian Amrad* gum, at full rates, is reported; while an offer for a large line of *Brazilian* gum has been refused, as being below market value.

GUM BENJAMIN.—At to-day's auctions the bulk of the rather heavy supply offered consisted of *Siam* gum, including 42 cases of a very fine variety, bold dark-brown blocky almonds, so-called "hard run." For this parcel 22l. per cwt. is the limit, but no bids were made to-day. It is said to be over twenty years ago since a similar parcel was offered for sale, and the report is that it then realised over 70l. per cwt. One case fine bold pale loose drop sold cheaply at 21l. For good bright small blocky almonds 12l. 5s. to 12l. 10s. was refused, while dull grey blocky siftings were bought in at

7l. per cwt. *Sumatra* seconds, good pale almondy centres, fine flavour, slightly false-packed corners, sold cheaply at 8l. 10s.; more false packed at 8l. Ordinary resiny *Penang* sold at 65s. per cwt., without reserve.

GUM ELEMI.—Four cases good white elemi were shown at auction to-day, and are held at 37s. per cwt.

GUM KINO.—Twenty-six cases rather dull gum were shown to-day, and bought in at 28s. per cwt. The owners would not accept 26s. per cwt.

GUM MYRRH.—At the last auctions fair Aden sorts declined to 80s. to 85s. per cwt.; and to-day that price was again solicited, but there were no bids. One lot of good pale sorts, however, brought 86s. per cwt. Fine picked gum sold at 6l. 15s. Good coarse siftings held at 80s., an offer of 75s. being refused.

HEMIDESMUS ROOT.—Nineteen bales fair brown from Madras are offered at very low rates; there appears to be a glut of this article on the market at present.

HONEY.—Several lots of *Jamaica* honey sold cheaply to-day at 27s. to 28s. per cwt. for fair brown liquid, partly thin and dirty mixed; good pale, 30s. to 30s. 6d. per cwt. *Chilian* sold fairly well, fair to fine white candied at 38s. to 44s.

INSECT FLOWERS are looking up a little in Triëste, but the season is over now. Best powder is quoted at 1s. 3d. to 1s. 4d. per lb.; open flowers at 82s.; half open at 102s.; and closed at 125s. per cwt. "c.i.f."

IODINE.—The price for crude iodine is maintained at 9d. per oz., and all iodides are firm at the recent quotations.

IPECACUANHA.—At to-day's sales 71 packages were placed in auction, and met a very indifferent market, there being clearly an absence of good orders, and no disposition to buy for speculation. With some difficulty 27 packages (mostly damaged) found buyers at 3d. per lb. decline for sound and 1st class damaged root, which realised 6s. 3d. to 6s. 4d. per lb. for fair stout, and 6s. 2d. for thin red; more damaged lots sold from 6s. 1d. to 5s. 10d. per lb.

JAMBUL SEED.—Eight 1-cwt. cases from Bombay were bought in to-day at 2s. 6d. per lb. nominally, but 1s. 9d. was suggested as a likely price.

LINSEED.—*Dutch* seed is rather firmly held, though there is plenty offering. The quotation runs from 46s. to 48s. per 424 lbs., *Russian* being about 3s. to 4s. below that price. *Bombay* seed, 44s. per 416 lbs.

LYCOPodium.—New *Russian* is offering very cheaply, at 140s. per cwt.

MATICO.—Nine bales greyish leaf, mixed with spurious, were bought in at 6d. per lb., but 4½d. was mentioned as the lowest price.

MERCURIALS.—All unchanged on the basis of 3s. 7d. per lb. for *Calomel*, with the exception of English *Vermilion*, which has been reduced in price to 2s. 10d. to 3s., according to quantity.

MUSK.—A fair supply at auction to-day met very little demand, and was mostly bought in at unchanged rates. Holders show great firmness, but the prices at which sales were effected at the last auctions were unobtainable to-day. *Tonquin*, pile 1, fine thin blue skin, dry, well trimmed, small to bold, 92s. 6d. to 95s., bought in; for another lot, not so bold, 87s. 6d. would be submitted. Usual old-fashioned pile 1, top and underskin, rather wormy, 82s. 6d. per oz., bought in. Genuine but very skinny second pile sold at 50s. per oz. Third pile, very fine thin blue skin, sold at 68s. to 69s. per oz.; good dry skinny untrimmed, 30s. to 30s. 6d. per oz. Fine *Lunan* pods, 50s. said to be refused. *Thibet* good white-haired pods, first pile, sold at 45s.; third pile, 19s. sold.

MUSTARD SEED.—*White* seed remains firm, owing to reports of scarcity in the English crop, while of foreign seed there is not much on offer. Prices range from 8s. to 12s. per bushel, according to variety and standard. Fine *Brown* seed firm up to 10s. per bushel.

NUX VOMICA.—Fifty-nine bags small silky *Cochin* sold at 9s. to 9s. 6d. per cwt.

OIL (CASTOR).—Still tending upward. Good *Calcutta* seconds are said to have sold yesterday at 4d. per lb. Finest

medicinal *Italian* 5½d. per lb. In Liverpool all the good *Calcutta* seconds offering at the end of last week were then taken out of the market at 3¾d. per lb., whereupon holders raised their quotations to 3¾d. or 4d. per lb. To arrive a considerable business is reported at an advance of ½d.

OIL (OLIVE).—*Mogadore* oil is very firm, with good inquiry, 34l. to 34l. 10s. being the quotation. *Spanish* oil nominal at 36l. Messina at 35l. From the producing countries we hear that, owing to the increase of consumption and to speculation, prices in Messina have considerably advanced. From Greece and the Greek islands none, or scarcely any oil, is offering for export, while the Candia market is also closed. The crop in Tunis is reported a very small one, and no oil will be available for shipment; while the shipments made from *Mogadore* are also likely to be not very large. In Spain prices are very firmly held. On the Naples market also prices are advancing, although the crop in Gioja—which is one of the largest oil-producing districts—is a good one; and the stock of oil at the market-centre of Gallipoli is rather heavy (3,556 tons, against 3,302 on August 31, 1888).

OIL (PETROLEUM).—Messrs. W. H. Samuel & Co., of Liverpool, state that the stock of crude oil in America has undergone further depletion to the extent of nearly three quarters of a million barrels in July. The shipments of crude oil from the oil regions in July were greater than they have ever been before in any one month, and exceeded the production by 31,000 barrels per day. On the other hand the stocks of refined oil in the principal European and English ports are larger than usual at this time of the year, and in this feature our market is no exception. However, the deliveries increase rapidly every year, and in proportion to deliveries the stocks held are very little larger than in previous years, and this applies equally to home markets and continental markets. Still, the fact that stocks are large will be a source of weakness for some time, and may delay to some extent the advance that has been expected. The destruction of 40,000 barrels of petroleum at Antwerp last week might have had an important effect upon prices if stocks had been small. The market is flat at 5¾d. to 5½d. for *American* spot, October-December, 6d. to 6½d. *Russian*, 5¾d. to 5½d. spot, and 5½d. October-December.

OILS (ESSENTIAL).—The demand for oil of *Star-anise* remains strong, and further sales at the recent advance to 6s. 1d. per lb. are spoken of. *Cassia* very quiet and neglected. Good sweet bright quality, 3s. 4d. to 3s. 5d. per lb. nominally. The *Lavender* crop in France is now finishing, and in a few days reliable news regarding the yield will be obtainable. *Bergamot* and *Orange* are reported much stronger from Italy, and as the new crop will not arrive until January there is a fair scope for a rise between now and the end of the year. *American* oil of *Peppermint* went lower early this week, when H.G.H. brand could certainly be bought at 11s. 1½d. per oz., but possibly 11s. might be accepted; since then, however, 11s. 3d. is again the quotation.

OPium.—To-day several telegraphic reports have arrived from Smyrna, stating the market there to be fully 2s. higher and very excited. The crop is reported to be only 5,000 cases, and the purchases for the Dutch Colonial Department are said to have taken a great part of the fine *Karahissar* opium out of the market. The London market has been rather quiet up to now. *Soft shipping*, fair to fine, 13s. to 15s.; *Druggist's*, 9s. to 10s. 6d.; *Persian*, nominal at 13s. per lb. Reports from Smyrna dated September 6 state that the buyers are holding off almost completely, the only business done in the first week of September being 48 baskets. The holders of stock in Smyrna have therefore, it is said, given up all hope of higher prices, but the largest of them still refuse to accept any reduction on the recent market rates. Our informant states that in general it is very difficult to effect a fall on the Smyrna opium market, because four-fifths of the opium received there consists of consignments made by the merchants of the interior. There is great competition amongst the Smyrna consignees, and in order to stand well with customers in the interior each of them declines to be the first to accept low prices.

QUICKSILVER quiet. Rothschilds still ask 9l. 15s., but second hands have declined to 9l. 4s.

PALM KERNELS.—The Liverpool market has suffered a

considerable decline, and a fair trade has been done at from 9l. 10s. to 10l. 18s. 9d. upwards.

PODOPHYLLUM RESIN 10s. per lb.

QUININE lower. Some business was done through the week at 1s. 2d. on the spot, and 1s. 2d. to 1s. 2½d. for forward delivery, but since yesterday 15,000 oz. are reported sold in secondhand at 1s. 1½d. per oz. for forward delivery. At the last London auctions the equivalent of quinine contained in the bark sold was 3,577 lbs., or 189 per cent. on an average.

RHUBARB.—At to-day's auctions a fair assortment was offered, and about one-third sold at irregular rates, occasionally a little easier, and some lots rather dearer. *Shensi* fine pale small druggist's root, pinky fracture, 2s. 7d.; good medium to bold pale coated ¾ fine fracture round, 1s. 9d.; orange coat medium to bold round, ¾ pinky fracture, 1s. 8d.; wormy orange coated flat coat, ¾ good pinky fracture, 1s. 4d. *High dried* bold, wormy rather dark fracture, 10d. to 10½d.; very wormy, 7½d. to 8d. per lb. Dr. Augustine Henry, an officer in the Chinese Customs, was last year at Ichang, on the Yang-tse River, in the heart of China, and from that post made an excursion into a part of the country where no foreigner had ever been before. Travelling due north from Ichang, he reached the range separating the basins of the Yangtse and Han rivers, and then made his way along the range westward as far as Szechuen. Here he found mountains from 8,000 to 10,000 feet high, partly covered with primeval forest. In these high regions, he states, rhubarb is dug up by the peasants. The plant is a tall and handsome one, and occurs wild at about 8,000 feet altitude. He only saw it cultivated on the mountains around Ichang, and that on a very small scale. The main source of the rhubarb exported to England was the range on which he was then travelling, in its extent from N.W. of Tchang to the frontier of Thibet, along the boundary-line between the provinces of Szechuen and Shensi.

SENNA.—Only some old and very inferior lots of *Tinnevelly* were offered, and several bales sold at 1½d. to 1¾d. for dull grey specky down to ½d. per lb. for very low blackish.

SENEGA firm at 1s. 11d. to 2s. per lb. for good bright root; a lot of fair chumpy quality sold at 1s. 11d. per lb. in sale.

SHELLAC.—The market opened steadily this week, but with little business. Some *AC garnet* lac was sold prior to the auctions at 58s. to 58s. 6d., while *TN orange* realised 72s. for October, and 73s. for November delivery. For Tuesday's auctions about 1,500 cases had originally been advertised, but the following quantities only were actually catalogued:—

	Cases	Cases
Orange lac	843 of which	109 were sold
Garnet "	75	" "
Button "	129	" 38 "
	1,047	147

There was a sudden and unexpected collapse in the market, the buyers holding off almost unanimously, while several of the brokers bought in all they had advertised. *Orange lac* sold at 1s. 6d. to 2s. reduction, from 68s. to 69s. being paid for fair strong but reddish to palish, unworked, and 65s. for block. Very fine pale worked orange (B.S.L.S.) was held by one broker at 5l., and one lot was said to be sold at that price. For fair AC garnet an offer of 57s. was refused. *Button lac* was represented by some exceptionally fine parcels. A lot of very fine AI blood lac sold at 99s. per cwt, and good to fine pale unworked firsts at 94s. to 95s.; fine seconds, 90s. to 92s. per cwt. The following were the quotations at Thursday's "call":—

	Sept.	Oct.	Nov.	Dec.
TN Orange, sellers	71/6	72/6	72/6	73/6
" buyers	69/6	70/6	71/6	71/6
AC Garnet, sellers	59/6	60/6	61/6	—
" buyers	58/6	58/6	59/6	—

SPICES.—*Arrowroot*: Ordinary St. Vincent, 2½d. to 2¾d.; Natal, 2¾d. per lb. Good Bermuda unchanged at 1s. 6d. per lb. There are sellers of *Cassia lignea* now at 22s., perhaps 21s. 6d., per cwt. The market is rather steady in spite of the enormous stock. *Cassia buds* firm at 47s. 6d. to 50s. per cwt. *Cloves*: Zanzibars in fair demand at the previous quotations; low dark to good bright, 5½d. to 6½d. per lb. Penangs up to 11½d. per lb. for good bright. *Ginger*: Cochin flat and lower, but the best cut maintains its price. Jamaica

quiet; medium to fine, 75s. to 100s. per cwt. *Mace* and *Nutmegs* steady. *Black pepper*, quiet on the spot and easier for forward. White pepper quiet; Siam, 11d. per lb. *Pimento*, steady, with sales of common to good clean at 3½d. to 3¾d. per lb.

TAMARINDS.—At to-day's drug sales a small parcel of ordinary West Indian tamarinds was bought in, but on Wednesday dark Barbados brought 13s. 6d. to 14s., and common dark St. Kitts, 7s. 6d. to 7s. 9d. per cwt.

TEA.—The Congou market shows a more healthy tone this week, and, with the discontinuance of the strike, a good assortment of tea of most kinds has been placed on the market, and a good business done all round. Dealers and retailers are still suffering from the non-delivery of teas bought as much as three weeks ago, some of which are as yet hardly out of the ships, but with more inquiry from the country, and a supply of useful Kaisows and Monings, Tuesday's sale went at very steady rates. Merchants are not flooding the market with tea, and if this policy be continued fairly firm prices may be looked for. *Assams* are steady to dearer, and low-priced teas show a distinct advance. Common Souchongs fetch 5½d. per lb., and common, undesirable Pekoes 6d. per lb. Some good liquoring, malty Pekoes have sold from 11d. to 1s. 2d. per lb., but there is very little assortment of Pekoes under 10d. *Ceylons* are very dear, and heavy supplies are taken week by week at constantly hardening prices.

TURMERIC.—Higher prices are quoted, and last week 11s. to 11s. 6d. per cwt. was paid for *Bengal*, and 10s. 9d. to 11s. 6d. for *Madras* finger; *Madras* bulbs, 8s. 6d. to 9s. per cwt.

VALERIAN.—The new root, which is now about to be shipped, comes very cheap, say at 22s. 6d. per cwt.

THE DUTCH MARKET.

AMSTERDAM, September 18.

CINCHONA.—The next public sales will be held here on October 3, and will contain 69 cases, 321 bales, druggists' bark (about 30 tons), and 19 cases, 1,173 bales manufacturers' bark (about 101 tons), of which 48 cases and 445 bales (39,847 kilos., = 39½ tons), are from the Government's plantations. These 48 cases and 445 bales consist of 37 cases (2,577 kilos.) *Succirubra* quills, testing 1.93 to 2.42 per cent. sulphate of quinine, total alkaloid 6.57 to 7.93 per cent.; 99 bales (7,878 kilos.) ditto broken quills, ditto 1.37 to 2.22, 4.34 to 7.56; 7 bales (578 kilos.) ditto renewed chips, ditto 2.39, 6.20; 62 bales (4,648 kilos.) ditto root, ditto 1.66 to 1.88, 8.06 to 8.55; 7 cases (456 kilos.) *Calisaya* Schuhkraft quills, ditto 0.83, 4.03; 20 bales (1,640 kilos.) ditto broken quills, ditto 0.86, 2.72; or together 44 cases and 188 bales (17,777 kilos.) = 17½ tons druggists' barks; 4 cases (237 kilos.) *C. Officialis* quills, ditto 3.66, 4.96; 16 bales (1,225 kilos.) ditto broken quills, ditto 4.09 to 5.28; 6 bales (485 kilos.) ditto root, ditto 6.08; 157 bales (13,304 kilos.) *C. Ledgeriana* broken quills and chips, ditto 2.08 to 9.03; 15 bales (1,349 kilos.) ditto renewed, ditto 6.51 to 6.67; 64 bales (5,470 kilos.) ditto root, ditto 5.47 to 7.25; or together 4 cases and 258 bales (22,070 kilos.) manufacturers' bark, 22 tons yielding 1,268 kilos. sulphate of quinine, or 5.76 per cent. on the average. Most of the other analyses have not yet been published.

THE RESORCIN TEST.—Referring to the colour reaction alleged to be produced by cocaine with resorcin, to which we referred a fortnight ago, it turns out to be not a test for cocaine but an exceedingly delicate test, for infinitesimal traces even, of nitric acid. Merck's cocaine was used by the discoverer of the reaction, and it has been found that that make contains slight traces of nitric acid. This has come as a great surprise, as Merck's cocaine had won great renown on the Continent as an absolutely pure product, and was so much in favour with medical men that it commanded a higher price than other makes. It has yet to be shown that these slight traces of nitric acid improve its physiological action as an anæsthetic.



Memoranda for Correspondents.

Always send your proper name and address: we do not publish them unless you wish: if you do not, please use a distinctive nom-de-plume.

Write on one side of the paper only; and devote a separate piece of paper to each query if you ask more than one, or if you are writing about other matters at the same time.

If you send us newspapers, please mark what you wish us to read.

Ask us anything of pharmaceutical interest: we shall do our best to reply.

Before writing for formulæ consult the last volume, if you have it.

Letters, queries, &c. will be attended to in the order received.

Possibilities of the Tea Trade.

SIR,—A short article appeared in *The Grocer* of last week intimating that a chemist advises the trade, through the medium of your journal, to sell tea in opposition to grocers; such opposition being described as likely to be very feeble, as chemists do not understand the business.

A few years ago I added groceries to my first-class drug business, and making a special study of the tea trade has resulted in my having blended and retailed about 7,000% worth. During that time I have retailed about 60,000% worth of general groceries, wines, &c., in addition to my drug business, and in the same shop. I can mention several chemists whose returns as chemists and grocers have exceeded mine.

Let my brother chemists (I hope they will not think badly of a grocer addressing them fraternally) pocket their "professional" pride, and go into the grocery business. They will not find it difficult to learn, or anything to be ashamed of. I enclose my card. I am, sir, yours, &c.,

A COUNTRY CHEMIST. (123/32.)

The Patent Medicine Trade.

SIR,—In common with "Orcadia" and "P. M. T.," I am one of those who think combination is the only set-off to the pressure of the times. I have always considered that chemists by combining, having proprietaries and patent medicines, &c., in common, practically have the key to the situation. I shall be very pleased to hear from "Orcadia" and "P. M. T." on the subject, when, perhaps, a conference could be arranged.

Faithfully yours,

Henfield, Sussex, Sept. 10.

E. MARSHALL.

Sequah's Terms.

Bona Fides (122/55) writes to draw attention to the fact that Sequah's preparations can be obtained from wholesale houses without any agreement such as appears to be required according to the advertisement of the company. "Bona Fides" says he has received some from his wholesale house at 21s. per dozen, and can retail it at any price he chooses. Sequah (Limited) tell us, in reference to this complaint, "We exert every possible effort to maintain the standard price of our preparations at 2s. per bottle, but, as you are well aware, in cases of some retailers it is almost an impossibility to do so."

Fly-papers.

SIR,—I think the new sticky fly-papers are not much to be commended on the ground of humanity to the flies. I suppose many people will laugh at the idea, but it cannot be very pleasant for any sensitive person to see and hear the unfortunates struggling perhaps for hours for dear life. The old plan is much more humane.

September 12.

SPERO. (127/3.)

The Queensland Opening.

SIR,—In your issue of June 1 "Chemicus" says there is an opening for a wholesale druggist in Townsville, in support of

which statement he makes some remarks which are not quite accurate. This town, the largest in Northern Queensland, has about 12,000 inhabitants, increasing at the rate of about 1,000 a year, so should scarcely be called "a large thriving town." The total population of this portion of the colony is under 70,000 (including 15,000 Chinese, South-Sea Islanders, and other aliens), scattered over an immense area, so there cannot possibly be "a large number of flourishing towns inland," nor can the number of chemists and druggists be "very large." The actual number of druggists registered in this year's "Pharmaceutical List" is thirty-seven, of which number six or seven are not in business. "Chemicus" says that North Queensland will soon have self-government, i.e. separation from the southern portion of the colony. This is a prophecy that may or may not be fulfilled; anyhow it is not likely to make much difference to our trade. It is scarcely necessary to add that, should any outsider be attracted here by the inducements held out by "Chemicus," he will not have it all his own way—the wholesale firms now doing business here will see to that.

The London Pharmacy, I am, sir, yours, &c.,
Townsville, North Queensland, July 30. C. RIDGLEY.

What did he Expect?

SIR,—I think it would be of immense benefit to the younger members of the craft if you would open your columns to a practical discussion of the present system of preparing for the Minor examination, and I believe it would also give your readers a clearer idea of the true reason for so large a proportion of failures. For myself, lulled by the flowery advertisements of professional coaches, I left my reading up till the last few months, relying on the trained experience of others and the time when I could pursue my studies practically; but alas! how cruelly did I find my confidence betrayed. I found practical dispensing was a myth, practical botany non-existent, and practical chemistry to be self-acquired, and the bulk of the preparation done in lodgings (instead of at home). Now, sir, I believe much of this could be improved if attention were drawn to the matter, and the stigma of stupidity would in a large measure be removed from the aspirants to modern pharmacy.

Yours truly,

A WOULD-BE MINOR. (127/60.)

The Chemist on the War-path.

SIR,—A friend of mine, who has recently set up a drug store in the capital city of a Western State, sends me some cuttings from a local paper that must surely stir a sympathetic nerve in every British pill grinder. There is to us poor "creatures of an effete civilisation" something sweet and refreshing—something idyllic—and that recalls the "large utterance of the early gods" in such a return to nature as is exhibited in my friend's excerpts; and I am sure that every reader of *THE CHEMIST AND DRUGGIST* will thank me for a glimpse of these wider horizons and more heroic possibilities than even the Pharmaceutical Conference can offer us.

The cuttings consist of a series of advertisements put forth by two rival druggists, of whom my friend is one. The first of the series is a preliminary whoop from the enemy (whom we will style the Pharmaceutical Prairie Flower), to the effect that "exaggeration by insinuation" is not his style. He "employs no subterfuge" in advertising his ginger-ale as "the best on earth." To this my friend (the Bayswater Game Cock) briefly, but effectively, replies that the simple statement of the superiority of his ginger-ale over every competitor satisfies him. He does not draw upon his imagination for half columns of statistics, and can, therefore, heartily endorse all that has been said about exaggeration, and so forth. Upon this the P.P.F. immediately "bluffs," by the announcement that he has "put up one hundred dollars in Sam Kinble's hands to be given to the Women's Relief Corps" if every statement he has made with regard to his ginger-ale is not true. Sam certifies the deposit (for a consideration) underneath. The B.G.C. parries this blow neatly in the next issue. "Putting it up," says he; "that is precisely what we are doing—putting it up as fast as we can, and have, therefore, no time to waste in tantalising the W. R. C. with visions of wealth they will never realise." This return

thrust appears to have sickened the P. P. F. He begins his next with "Bah! How the lords do fluke! Wriggling, squirming, crawling, and sneaking away under false expressions." He holds up to ridicule their "unsightly, illegiant (*sic*), and nauseous beverage"; blames himself for having "advertised it by controversy"; and "retires permanently from a controversy rendered disgusting by the moral turpitude of the would-be imitators" of his ginger-ale—"the best on earth." (Exit the P. P. F.). Then the B. G. C. "ups" and crows "A Fond Farewell," thus: "The expiring throes—appropriately styled 'Bah!'—which announce the sufferer's withdrawal from further futile molestation of his competitors are not the first instance of the perpetrators of an unprovoked attack being forced to retire discomfited, &c., &c. For fecundity of vituperative resource, combined with pointless irony, we gracefully yield the palm to the 'best on earth'; but we do claim the dual capability of 'minding our own business,' and of affording to a grateful public, at the ridiculously low price of 5c., that boon and blessing to men—our ginger-ale, best in the city; not a firey, scorching throat liniment, but a pleasant, cooling beverage!"

Thus, sir, the "noise of battle" rolls to us from the pharmacies of the Far West. May we not well grieve over our own duller modes and feebler tactics, and sigh for something of the *verve* and freedom of the boundless prairie? How often, when the well-earned reward of years of patient toil is endangered by some upstart rival, one would like to "go for" the interloper in some such style as the above, but is restrained by a craven fear of the respectabilities. It is, however, some consolation to find that the British Lion is not quite played out, but can still hold his own when put to it. Perhaps in some happier sphere we, too, may once more "find our hands" in "the manner of primitive man."

I am, &c.,

Epworth, Sept. 17.

C. C. BELL.

The Conference Photograph.

SIR,—Kindly allow me to answer numerous inquiries as to the photograph of members of the Conference taken at Hexham on Thursday, September 12. A very satisfactory picture has been obtained, and copies may be had from Mr. John Pike, 1 New Bridge Street, Newcastle. The size is 14½ in. by 9½ in., and the price is 2s., unmounted; postage 1d. Your readers who were present will doubtless desire to procure copies.

Yours faithfully,

Newcastle-on-Tyne, Sept. 17. T. MALTY CLAGUE.

DISPENSING NOTES.

The opinions of practical readers are invited on subjects discussed under this heading.

Pill Queries.

A Constant Reader wishes the best excipient for:—

Ferri sulph.	..	..	..	..	gr. ij.
Aloes	..	..	..	..	gr. j.
Ext. hyoscyam.	..	..	..	..	gr. j.
Ol. caryoph.	..	..	..	..	℥j.

M. Tales xij.

Also—

Pulv. capsici	..	..	..	..	gr. iij.
" opii	..	..	..	..	gr. iij.
" ipecac.	..	..	..	..	gr. j.
Conf. ros.	..	..	..	..	q.s.

M. Divide in pil. iv.

I have used theriacanth.

[Why? There should be no difficulty with these with conf. ros., q.s. If the confection is old and stiff, use a drop or two of syrup in addition.]

Ferri et Ammonii Citrate Mixtures.

Mr. B. S. Proctor's paper on the above subject read before the British Pharmaceutical Conference brought to my recollection a mixture we had considerable trouble with some time ago, in that it rapidly went bad, and assumed a gela-

tinous consistence, pouring from the bottle like very thick mucilage. The formula was as follows:—

Ferri et ammon. cit.	..	..	..	gr. 80
Liq. arsenici hydroch.	..	..	..	℥43
Syr. aurantii	..	..	..	3j.
Inf. casearillae ad	..	..	..	3viij.

Ft. mist.

I prepared it in three different ways: first with the fresh infusion, secondly with the concentrated infusion, and lastly without the syr. aurantii—as I was inclined to think that some form of fermentation was set up by the presence of organic germs acting on the sugar. In all three cases the mixture changed after keeping about a week. The ferri am. cit. seemed to be of good quality, and, with the acid solution of arsenic, formed an acid mixture which should have kept well; but I believe the change was due to the infusion, as when made with plain water there was no change after keeping for two weeks.

Yours truly,

Dublin, September 16.

PHARMACIST. (129/36.)

[Mixtures containing casearilla infusion often go wrong. The explanation seems to lie in the direction indicated by Mr. Martindale last week. See also "The Art of Dispensing," on visceous mixtures.]

Permanganate Pills.

124/30. *Savin* wishes for our opinion of the following:—

Ol. sabinæ	..	..	..	..	℥j.
Lupulini	..	..	..	..	gr. j.
Ext. hyoscyam.	..	..	..	..	gr. ij.
Pot. permang.	..	..	..	..	gr. j.

M. Ft. pil. tales xij.

He obtained a good mass by rubbing up the pot. permang. with the ol. sabinæ, then adding the other ingredients and 12 grs. of kaolin. [Quite right; most oils, even ol. terebinth., may be rubbed up with pot. permang., not only without decomposition, but it seems to prevent any immediate change when substances are added that would at once reduce it in the presence of a watery excipient.]

Creosote Pills.

Kindly tell me how the following should be dispensed to make a presentable pill:—

Arsen. oxid. alb.	..	..	..	..	gr. iss.
Creosot. pur.	..	..	..	..	3j.
Ferri iodidi	..	..	..	..	3j.
P. digitalis	..	..	..	..	9j.
Iodoform	..	..	..	..	3j.

Ft. pil. 60.

DOROTHY. (124/54.)

[Rub up the creosote and ac. arsenios., add 30 grs. of tragacanth, then 3j. of water, incorporate thoroughly, and add the other ingredients in their order. Use a few drops more water or syrup if the mass should be too elastic to roll easily; coat or varnish.]

Saving Time in Dispensing.

SIR,—What is more annoying when busy than to be presented with a prescription for one, two, three, or more pills, especially if the dispenser has previously had the prescription in hand? Any attempt to provide for repetition of small quantities of pills by invariably making twenty-four, and saving the remainder, will only end in disgust, unless a proper system is adopted.

My plan is this, and it has really proved labour-saving. After making twenty-four pills and dispensing the prescribed number, the remainder are boxed and marked with the patient's name and prescription number. The name and number are entered in a small "alphabet" book, and the pills are arranged alphabetically in any convenient place (behind the dispensing bottles). When the twenty-four are eventually dispensed, a mark is made in the pill-book to indicate they are *non est*. Thus by referring to the book it may be ascertained in half a minute whether the pills are ready made or not, and in another half minute the particular pills may be secured. This affords a good lesson in ex-

ipients. Pills made up with water, spirit, or mucilage become very hard, and can scarcely be rounded even with the aid of heat. Tragacanth paste and "theriacanth" are the most suitable. Powders are best made into pills by triturating with compound tragacanth powder, and massing with glycerine and water.

Yours truly,
S. D. F. (129/18.)

[We have always acted on the belief that prescription pills should be freshly made when dispensed. Is this not the general custom?]

A Mercurial Mixture.

125/69. *D. M. W.* asks if, as he supposes, ammoniated mercury would be deposited in the following mixture, and if so, should the attention of the prescriber be drawn to it:—

Liq. hydrarg. perchlor...	..	..	..	3vj.
Potass. iodidi ..	..	..	..	5iij. gr. xij.
Spt. ammon. aromat. ..	..	..	..	3iij.
Aque ad ..	..	..	..	3xij.

M.

Sig.: Nearly a dessertspoonful, thrice daily after meals, in a wineglass of water.

[Very shortly after the mixture has been compounded a white precipitate is formed, which is an ammoniated mercury; the mixture should be dispensed with a "shake" label. Call the attention of the prescriber to the reaction; but we may say that the prescription is a common one. The spt. ammon. arom. is added generally with the intention of moderating the action of the iodide, and preventing iodism.]

125/8. *Patchouli* asks (1) if a mixture of Fellows's syrup and Parrish's syrup should be labelled "The Mixture," or "The Syrup." [It is both; but is there any special reason why it should be designated by either title? "The Mixture," "The Lotion," and the like are dispensers' additions to the prescribers' directions, intended to distinguish two or more articles from each other. In this instance there seems to have been no necessity for the addition, but "The Syrup" is certainly the more correct heading, and should be used if the prescriber does not object to such a specific hint being given as to the nature of the medicine]. (2) Should a "shake" label be put on the top or the bottom of a bottle? [On the top—*vide* "The Art of Dispensing".]

LEGAL QUERIES.

126/5. *Methyl.*—The so-called methylated ether and methylated chloroform may be employed in medicine for internal use.

125/64. *Querens.*—The tenant usually pays the cost of the lease, and of course has the right to keep it. But this is a matter which can be arranged between landlord and tenant.

125/51. *X. Y. Z.*—Neither label appears to involve liability to medicine-stamp duty. If you would read Alpe's "Medicine-stamp Duty" you would know as much as we do about the liability.

125/36. *J. C.*—We should have thought your solicitor would have got the consent in writing from the landlords for the transfer of the lease to you. If he did not do so, and you cannot prove that consent otherwise, you cannot compel them to recognise you.

127/30. *Ergotina.*—If the titles you suggest are descriptive, as we presume they would be, they cannot be registered. We do not reply to a crowd of questions on various topics on a single post-card.

126/9. *Seven Years' Subscriber.*—Whether you can compel your debtor to pay you the rent you claim depends (1) on his means, (2) on the terms arranged, and (3) on the evidence

you may be able to adduce. You give us no information on these points, so we fail to see how we can answer you. You might sue him in the county court, and this may bring a settlement.

128/7. *H. F.*—It is legal for a grocer to sell chloro lyne. Read section 16 of the Pharmacy Act.

127/61. *J. W. E.*—Inhalations generally may be liable to medicine-stamp duty; fumigations and vaporising preparations are not generally subject to it. See Alpe's "Medicine-stamp Duty" for explanation of a difficulty like this. The fee on application for registration of a trade-mark is 5s., and a further 20s. if the mark is accepted.

128/25. *Post Card.*—You can print what you like on the correspondence side of a post card, and you can get your own cards stamped at the Stationery Office, Somerset House; but they must be the same size as the official ones.

123/51. *Hibernicus.*—Chemists and druggists in business in Ireland at the time of the passing of the Act in 1875 are entitled to sell poisons. If the Society should prosecute anyone for the sale of poisons they may be called upon to prove that the name does not appear on the register of chemists and druggists. But they never prepared such a register; hence the prosecution is likely to be futile.

129/41. *Anti-Quack.*—There is nothing illegal in a medicine-maker trading under a fictitious name. We do not see how it could be of general interest if we were to investigate the composition of the mixture to which you refer.

129/45. *Xylonite.*—You must give us the exact facts, not a paraphrase of them, if you want an opinion of any value.

129/16. *Incognito.*—The widow can only carry on the business of her deceased husband as a chemist and druggist in the character of executrix, administratrix, or trustee. As such she can continue the business indefinitely. This was decided in the case of the Pharmaceutical Society v. Judd. See this journal, November 20, 1886.

124/53. *Spectacles* says he bought through the Exchange Column of THE CHEMIST AND DRUGGIST an agent's stock of Lawrence's spectacles. He issued handbills announcing that he had them for sale at less than the maker's advertised prices, and fixed two of Mr. Lawrence's show-cards in the window. On the show-card were the words, "Agent for Lawrence's improved spectacles," trade-mark, and copy of a testimonial. Mr. Lawrence gives our correspondent notice that the show-card forms his registered trade-mark, and he requests that he will discontinue using it, intimating that he shall hold him responsible for any loss or damage occasioned. Our correspondent thinks Mr. Lawrence can have no right to interfere. We are inclined to hold a different opinion. A man has a property in his own name, and can restrain its improper user. It is true that if X. sells goods either directly or through an agent he cannot prevent the purchaser re-selling them under the name of X.'s goods at any price he likes. Such purchaser has no right, however, to describe himself as agent for X., as when the agent sold the goods he had no right to delegate his agency to the new purchaser. The testimonial, too, in this case is Mr. Lawrence's property, and its publication without his authority could probably be restrained by injunction. The show-cards were probably sent to the agent *qua* agent, and not as an ordinary advertisement, and it is doubtful whether the agent had any right to part with them.

124/42. *Boracic.*—A Horse Liniment would not require to be registered in the poison-book if it contained corrosive sublimate, as it would come under the heading of "preparations" of corrosive sublimate, and not as corrosive sublimate

in first part of the poison schedule. The liniment must, however, be labelled poison, and the label should specify the poison, and bear the name and address of the seller.

123/33. *Spes.*—The Pharmaceutical Council have the power to prevent the use of such titles as wholesale druggist or manufacturing chemist by unregistered persons, and they would exercise that power if the titles were used to cover a retail business. The title druggist is open to anyone.

85/32. *Hipolite.*—A patent medicine licence allows the licensee to sell patent medicines in any number of places, but these addresses must be stated when the licence is applied for. You may sell goods of your own make from house to house, but if you want to sell other goods as well you would also require a hawkers licence. Price, 2*l.* per annum.

MISCELLANEOUS INQUIRIES.

*A large number of correspondents ask us for formulae and other information already published in this journal. It is not fair to more careful readers that we should frequently repeat such information, and so long as the back numbers containing the formulae or replies required are in print we must decline to do so. Back numbers of our weekly issue can be obtained from the publisher at 4*d.* each.*

Correspondents who have made inquiries regarding the following subjects will find the information in the numbers indicated.

116/4. *Mitre.*—Formulae for Erasmus Wilson's Hair-wash are numerous. Try—

Liq. ammon. B.P.	..	..	..	..	3iv.
Ol. amygdal.	..	..	..	..	3iv.
Spt. rosmar.	..	..	..	..	3ijss.
Aq. mellis..	..	..	..	..	3ijss.

M.

This is a favourite in some districts.

106/10. *Fellow Craft.*—The signs seen upon old-fashioned carboys were used by the alchemists to indicate the metals and their supposed properties. They are the same as used by the astrologists to represent the planets. The one you give represents iron or Mars. The bird, the key, and flame, represent the phoenix rising from its ashes.

89/52. *Dick.*—Non-poisonous powder for preserving milk and deodorising closets is simply powdered borax. Nessler's reagent can be easily and quickly made by following the formula given in B.P., page 484.

121/51. *Chemicus.*—For formula for good brown hair-dye see "Fustic," May 11, 1889. See also DIARY. You might avoid the reddish tint caused by your hair-dye if you recommended a vaseline pomade to be freely used as a dressing.

117/19. *Nomen.*—We do not at present recollect the reply you refer to; but for obtaining a small electric light, say five or ten candle-power, you will find either bichromate or Bunsen cells, without a coil, suitable. You would need from two to four 1-pint cells.

123/24. *Anxious One* wishes to know the properties and uses of **Commercial Bisulphate of Potash**. Soluble in water, acid reaction, effervesces with carbonates, and enters into the composition of various tartar substitutes and cheap baking-powder. It is also used in analytical chemistry.

118/60. *J. S. M.*—Administration of Cocaine.—See answer to "A. G. S. O." in our issue of September 7.

121/64. *Jacob.*—Can Asbestos or Mica be Dissolved?—See issue of Sept. 7. They cannot be dissolved without some chemical change. Try the effect of a strong solution of caustic soda. Give us an idea of what you wish to be at; we shall then be better able to assist you.

124/57. *Cheshire Cheese.*—The salt, along with 1 to 20 of glycerine, will preserve it; a minute proportion (1-120) of syrupy lactic acid is sometimes added. The best way to clarify it is to shake up with powdered fuller's-earth, then filter; add the glycerine after filtering. See also formula, page 388, September 22, 1888.

122/53. *Waste* has made a batch of Lime-juice and Glycerine from No. 1 formula in DIARY. He dissolved the wax in the oil over a water-bath, and proceeded as directed, but obtained a product so thick that it would not pour from the bottle, even after an extra ounce of glycerine had been added. We would suggest heating gently, and adding another quantity of oil and lime-water; and in future try only half an ounce of white wax. No. 2 formula, with 3xvj. ol. nucis instead of 3vj., gives satisfactory results.

123/34. *Duam* wishes to know how to prepare Antiseptic Wool. Which of the numerous antiseptic wools does he wish—salicylic, boric, corrosive, iodoform, &c.? They are all prepared on the same principle, but vary in detail. Dry absorbent wool is immersed in solutions of suitable strength, pressed lightly out, and dried slowly, care being taken to turn and shake up the wool occasionally during drying, so as to ensure a uniform deposition of the antiseptic, and to prevent the wool becoming lumpy.

121/54. *Crema* will find a formula for a very fine scent for fancy tobaccos on page 26, July 6, 1889.

121/50. *Constantia* wishes to know the best means for preparing leaves in the skeleton form for mounting, and asks if caustic potash would answer for destroying the fleshy portion. Yes; try a solution 1 in 6, but be careful not to leave too long in, and wash well in water before mounting.

124/25. *Junior* wishes directions for the use of liq. sodii ethylatis as a Depilatory. It has been recommended lately to be painted on with a glass brush and repeated once a week, if necessary. We would recommend "Junior" to be careful, as we have an impression that the skin, as well as the hair, may come off in time.

Powder for Poultry.

Pulv. aluminis ..	..	..	..	..	3iv.
" bol. armen.	..	..	..	..	grs. xx.
Piper. cayenn.	..	..	..	..	grs. xx.
Ess. bergam.	..	..	..	..	ʒij.

M.

One teaspoonful to be mixed once a day in their food, for every forty pheasants, turkeys, or chickens.

A. L. (129/13), who kindly sends the above, says he believes it to represent the article which a correspondent asked as a remedy for red worms or snakes in pheasants. "A. L." prepared it for that purpose some years since for a game-keeper, who found it most effective.

124/26. *Vino.*—You had better apply to your local excise officer to know how to proceed to get an "off" licence. You are too late for this year; but if you can get a recommendation from two magistrates you can obtain an intermediate licence from Somerset House. All wine merchants supply bottled wines and spirits. See the advertisement of a good wholesale firm in THE CHEMISTS' AND DRUGGISTS' DIARY.

126/7. *J. H. B.*—We cannot reprint formulae on the ground that your copy "has gone amissing." You must "plunge" to the extent of fourpence.

128/45. *Aloin*.—We do not think you would be justified in selling indiscriminately pills made from the formula you quote.

129/32. *J. Walker*.—We do not answer all questions sent to us, nor can we undertake to give reasons for our discrimination.

85/23. *A. E. C.* is about to take a **Fish Preserved in Spirit** out to Australia, and wishes to know how best to render the cork of the bottle impervious to the spirit. [Use a good fresh cork, placing a piece of parchment paper between it and the bottle. Push the cork well "home," trim off the paper, and dip part of the neck of the bottle in melted paraffin.]

125/68. *Puzzled* has supplied a customer with a **Furniture Polish** consisting of linseed oil, 40 oz.; vinegar, 6 oz.; turpentine, 3 oz.; hydrochloric acid, 1 oz.; and methylated spirit, 2 oz. The customer complains that it has taken the polish off the woodwork of an organ, and where it has come in contact with the ivory keys has changed them brown, which the application of soap and water turns to a red. He wishes this to be explained and a remedy suggested. [It is likely the bottle had never been shaken up, and the spirituous acid liquid may have been rubbed on. This would be quite enough to account for the mischief. To remove the coloration from the keys, try the careful application of a clear solution of chlorinated lime, and finish off with putty-powder and a rag.]

118/70. *Areher*.—**Caffeine**, until about eighteen months ago, was made principally in Germany (and we believe to some slight extent in France) from the refuse of tea, which could not be admitted into this country without paying duty. Now this refuse tea is admitted here, under certain conditions, duty free, and two English firms have also commenced making caffeine. It is impossible to give any figures concerning the consumption of caffeine in this country in 1888, no returns being in existence, while the makers and importers would not, for obvious reasons, care to tell. You will find the price of caffeine (both alkaloid and citrate) quoted in our market reports from time to time. Since the English makers have been able to compete the price has fallen to a very low figure, and we should not think that the industry can be an exceptionally profitable one at the present rates.

124/21. *Rob*.—**Eau Sedative** (Raspail).—Solution of ammonia, 100 grammes; distilled water, 900 grammes; common salt, 20 grammes; camphor, 2 grammes; essence of roses, a sufficiency to flavour.

124/24. *Laburnum*.—We thank you for your suggestions. In regard to botany and chemistry of the South Kensington scheme, we may say that the information desired would take up about as much space as the whole article on Scientific Education. Whitworth scholarships are not open to chemists' assistants. We know of several in that class who have taken science scholarships offered by the Education Department, but we cannot at present get a complete statistical statement of the occupations of those who have taken such scholarships since their foundation.

121/59. *J. P. H.* (Salisbury).—Tonic powders for poultry, see **DIARY**, 1889. We do not know the formula of Douglas's tonic mixture.

125/52. *J. L.* submits the following as an **Ointment**, and wishes our opinion of it:—

Vaseline	6 oz.
Oxide of zinc	1 "
Flowers of sulphur	$\frac{1}{2}$ "

[It makes a nice ointment, keeps well, and proves very

useful in many cases where such a preparation is indicated. Many chemists use vaseline in preparing zinc ointment, &c.]

121/38. *R. P. G.*—The powder cannot be analysed.

114/70. *R. T.*—We can make nothing of the article.

78/71. *Attraction*.—The **Remedy for Asthma** seems to be a mixture of citric acid (about 4 grains) and morphine hydrochlorate (say $\frac{1}{8}$ th of a grain).

124/14. *Case*, while thanking us for the different formulæ for **Invisible Ink** supplied a week or two since, which he found very good, is still in search of one that will show black on the application of moisture. [The nearest we can think of to what he wants is:—Pyrogallie acid, 16 grains; tartaric acid, 12 grains; water, 1 oz.; with a trace of sugar or gum. Use a clean quill to write with, and do not leave the paper too much exposed to light; to develop the colour let the paper be moistened with water containing free alkali (soda, potash, or ammonia), when the writing will appear a distinct brownish-black, or hold the paper over steam for a second or two, then in the vapour of ammonia.]

125/17. *J. Pen*.—**Marking Ink** (Redwood's) which is stronger than usual will require prolonged heating, in order that the whole of the silver may be reduced to the metallic state. The ink, of course, writes brown, and changes to black only on heating. The exposure of the ink to the light while making should not materially effect its quality.

83/36. *Nemo*.—The best way of modifying the flavour of asafoetida in a **Sauce** would be to diminish the quantity of the asafoetida used. This you might do in the preparation which you have made by adding some to it which does not contain asafoetida.

123/7. *H. F.*—(1) Cocaine itself is not used in solution for the eyes. Its most harmless solvent is rectified spirit, and that has a powerfully irritating effect on the eye. (2) "When **Preserving Plums with Chloroform**," "H. F." further asks, "how can one get rid of the chloroform?" Some he did last week when made into a pie tasted so strongly (even after being reheated with the crust off) of chloroform that he was unable to eat them. [Perhaps someone who has tried may be able to enlighten "H. F."]

88/11. *R. F. D.* wants to know how he can quite fill the tube of a **Fitzroy Barometer** with mercury. He does not succeed in getting rid of a little air space. [The plan is to be dexterous in turning the tube when fresh mercury is placed in the bend. This requires patience, but success comes in the long run.]

125/6. *S. B. E.*—Bromoform is almost three times heavier than water, and is practically insoluble in it. There are other liquids between two and three times heavier, which can be placed in the same category, but we know of none except mercury over four times heavier.

Information Wanted.

[Replies to the following requests are solicited by correspondents of THE CHEMIST AND DRUGGIST.]

122/67. Name and address of makers of Golding Bird's cod-liver oil.

117/19. Powder used in fish-frying. For what purpose is it used? To improve the colour?

128/6. Formula for lime-tree blossom.

125/59. "Therapeutic dermatio quin. lot.—Schultz." What is it, or where obtainable?

PALATABLE TONIC LAXATIVE.

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CASCARA

Prepared with the finest sweetened Eating Chocolate, the proportion of the active ingredient being carefully adjusted so that each Tablet or Bonbon contains a dose equivalent to twenty minims of the Fluid Extract of Cascara. The

Tablets are of such a form that they can be easily divided, should a smaller dose be desired; and *the taste can hardly be distinguished from that of ordinary Chocolate.*

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Very strong & nutritious, THIS Cocoa is cheaper & more satisfying than Tea.

"Admirable,"	} <i>BRITISH</i>	"Delicate aroma,"	} <i>THE</i>	
"flavour perfect,"		"PURE & unmixed,"		} <i>LANCET.</i>
"and SO PURE."		"goes a long way."		
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" 5.—Astringent Balls	24/	"
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" 17.—Cough Balls	27/	"
" 8.—Diuretic Balls	24/	"
" 9.—Fever Balls	24/	"
" 1.—Physic Balls, 4 drs.	24/	"
" 2.—Physic Balls, 5 "	30/	"
" 3.—Physic Balls, 6 "	36/	"
" 18.—Physic Balls, 7 "	42/	"
" 19.—Physic Balls, 8 "	48/	"
" 15.—Stimulating Balls	24/	"
" 10.—Tonic Balls	24/	"
" 11.—Tonic Balls	20/	"
" 13.—Worm Balls	30/	"
" 14.—Worm Balls	60/	"

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PURE AND CHEAP:

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Mono Carbonate of Soda	1.90
Sulphate of Soda	trace
Chloride of Sodium035
Moisture82
Insoluble	nil

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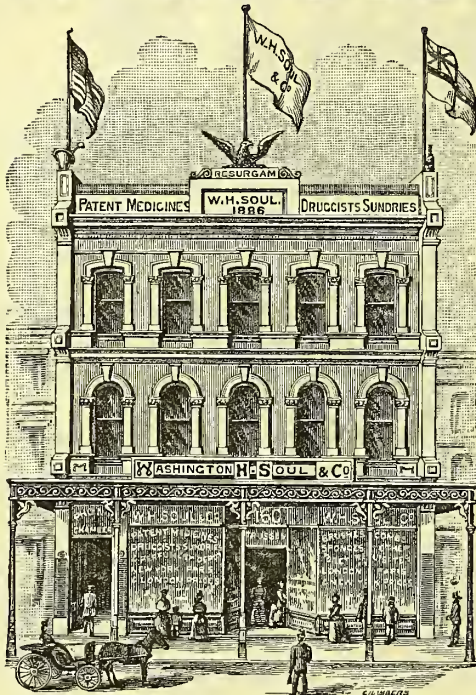
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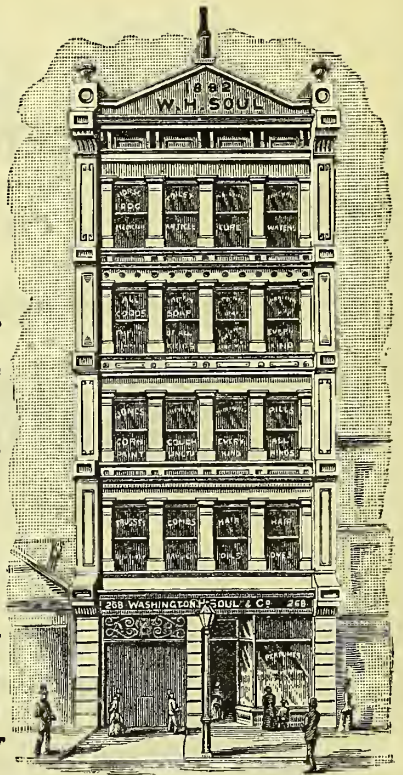
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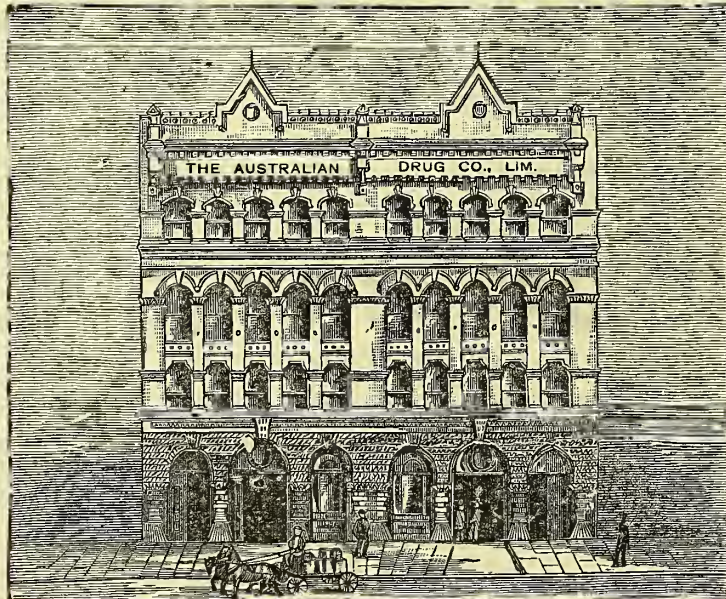


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Wholesale Druggists and Manufacturing Chemists,
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MENTHOL Our Extra Steam Refined quality, is in firm, hard, dry and snowy white crystals, entirely free from oily contamination (and therefore of the highest melting point.) As the original and largest manufacturers in the world of the true Japan Menthol, we guarantee our brand to be absolutely pure. Beware of substitutes. For full particulars, therapeutic uses, etc. see special circulars to be had on application.

Our Extra Steam Refined Oil is treble distilled and twice rectified by steam, by an entirely new process and in apparatus of our own invention, by which all these polymeric products

PEPPERMINT of a tarry and resinous nature which are objected to by some consumers are extracted. It is of water white colour, retaining its full aroma, pungency and strength and guaranteed absolutely pure and soluble in spirits of wine.

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manufacture of the Solid Camphor of Commerce. Our brand is guaranteed to be the natural oil and not the fictitious mixture of refuse Camphor and Turpentine generally sold. Having made a special study of its manufacture we have succeeded in producing a colourless oil and entirely free from any smell. It is a remedy in Rheumatism, a good solvent of resins, and the most perfect article for the use of the essential oil distiller.

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This concentrated preparation is carefully drawn in our own laboratory, is highly recommended, and is daily finding increased favour with the trade for making Sp. Nitre, as required for use, and thus avoiding the risk of a development of free acid, which is more or less prevalent in Sp. Nitre that has been drawn some time. Price in Winchester Quarts, 8s. per lb., net.

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Hydrochinon and all Chemicals for Photography.

For the convenience of Chemists, and to secure the "A I" COD LIVER OIL being placed in the hands of the Public perfectly sweet, we have packed it in 8-oz. and 16-oz. Green Flint Oval and Flat bottles, at the LOWEST POSSIBLE PRICE.

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IN BOTTLES, containing 8-oz. fluid	...	6/3	...	6/0	...	5/9 dozen, to a/c.
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" 16-oz. "	...	11/6	...	11/3	...	11/0 " "

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Price (in England) 10s. 6d. per pound, packed (for Dispensing only) in 10-oz., 22-oz., 40-oz., and 90-oz. Bottles.

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As Prepared by the Discoverer, SIR JAMES MURRAY, M.D.

FOR OVER 60 YEARS IN USE AS AN EXCELLENT REMEDY FOR ALL DISEASES OF THE STOMACH AND LIVER.

In Summer time, and in warm climates, it is invaluable, as it cools the Blood and improves the system generally

It is the only known Drug which cures that most unpleasant of all maladies, viz., a **HEADACHE**. In cases of Gout and Indigestion it is indispensable.

AND IN THE NURSERY IT IS INVALUABLE. SPOKEN OF MOST HIGHLY BY ALL THE PROFESSION

Sold by all respectable Chemists, in Large sized Bottles (the 1s. size containing nearly Double the Quantity usually sold at that price), at 1s., 2s. 6d., and 3s. 6d. each. Also in Winchester Quarts for Dispensary and Hospital use.

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New and Improved Hypnotic, Patented and Registered.
Is free from all unpleasant by or after effects usually
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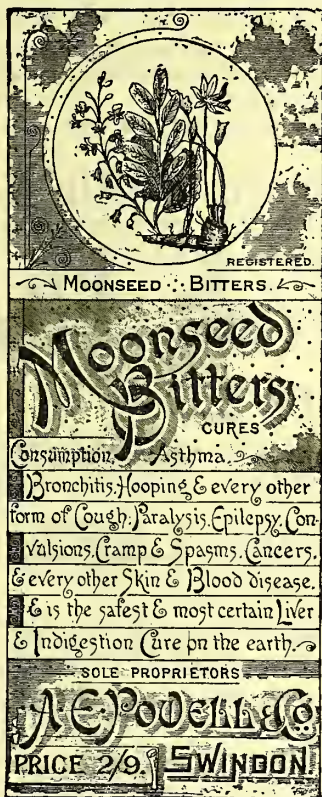
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Because every one who retails Moonseed Bitters has to sign an Agreement or Contract in the following terms:—



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It is also sold at 4/6.

MOONSEED OINTMENT.

Retails at 1/1½, 2/9, 4/6 per box.

Memorandum of Agreement made this.....day of..... 1889, between A. E. POWELL & COMPANY, of Swindon in the County of Wilts, Proprietors of the Moonseed Bitters and Moonseed Ointment (hereinafter called the "Vendors"), of the one part and of (hereinafter called "the Purchasers"), of the other part.

Whereby it is mutually agreed between the said parties hereto as follows:—

In consideration of the Vendors selling to and supplying the Purchasers with Moonseed Bitters, Moonseed Ointment, and other preparations manufactured and sold by them (hereinafter termed "the Goods") at their usual prices, the Purchasers will observe and perform the following terms and conditions:—

1. The Purchasers to sell the Goods retail for full printed prices only, and for each and every Bottle or Box of Moonseed Bitters, Ointment, or Pills sold by him or them at any less price, without the written consent of the Vendors, the Purchasers shall pay to the Vendors the Sum of Twenty Shillings in the nature of a penalty, to be recoverable as ascertained liquidated damages.

2. The Purchasers not to supply any Wholesale House nor to sell the Goods wholesale to any Chemist or Druggist or Medicine Vendor who will not previously enter into an Agreement to retail the same at prices in accordance with the preceding Clause No. 1 of these presents.

All Purchasers who have signed a similar form of Agreement to the foregoing will be supplied upon the Vendors' usual trade terms, but those Purchasers who do not sign a similar form of Agreement to be supplied upon the following terms only, namely:—RETAIL, 4s. 5d. for each and every 4s. 6d. Box or Bottle, 2s. 8d. for each and every 2s. 9d. Box or Bottle, and 1s. 0½d. for each and every 1s. 1½d. Box or Bottle—net in all cases. WHOLESALE, 4s. 4d. for each and every 4s. 6d. Box and Bottle, 2s. 7d. for each and every 2s. 9d. Box or Bottle, and 11½d. for each and every 1s. 1½d. Box or Bottle—net in all cases. This Agreement and the terms and conditions herein contained to remain in full force and virtue for the term of 7 years from the first day of March, 1889.

As witness the hands of the said parties hereto the day and year first above written.

We call attention to the important steps which we have taken to prevent our specialities being retailed at less than the advertised prices, and we ask the co-operation of the Trade in maintaining the integrity of the scheme whereby the sale of our preparations may always be retained by the legitimate trade. We will not only endeavour, by all means in our power, to prevent the advertised prices being "Cut," but will give Chemists every assistance and facility for making this a large as well as a paying business.

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THE GREAT CORN CURE.

Never known to fail!

A Certain Cure for Corns!

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A new and effectual remedy for

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Will bear the strongest recommendation.

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DR. ALLEN'S PURE EXTRACT OF MALT.

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The best articles of their respective kinds in the market; packed in elegant cardboard cases. Sell freely against more expensive preparations. The above are well worth the attention of the Trade. They are first-class preparations, and are attractively packed, leaving a handsome profit for the retailer.

An abundance of novel and taking advertising matter sent with each order.

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and also the various Formulæ of the Special Preparations of

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they are prepared to execute orders for the same, and pledge themselves to supply them in all their integrity.

Specimens of these Preparations have remained in the Museum of Kew Gardens during 23 years without deterioration.

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IMPORTERS OF ESSENTIAL OILS, OLIVE OILS, FINEST QUALITY NORWEGIAN COD LIVER OIL.

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Powders ground in own mills. Purity guaranteed. Bituminol equal to, and cheaper than, Vaseline.

Samples free on application. Special Quotation to Cash or Large Buyers. Monthly Priced List forwarded on receipt of business card.

LIME JUICE CORDIAL

A Pure Non-Alcoholic

Refreshing Beverage, made from the
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Quart Size (1 doz. contains 2 galls.) - - 7/6 doz., Net Cash.
6 doz., with Buyer's own name - - - 7/- „ „

QUININE AND IRON TONIC.

PERMANENT & BRIGHT.

8-oz. Bottles - 6/6 doz.

16-oz. „ - 12/- „

PLAIN LABELS.

If 6 doz. be ordered, Buyers
may have their own name
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Cash with order on new accounts.

EFFERVESCENT CITRATE OF MAGNESIA.

Good quality, in pale green
round Bottles; Labels with-
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$\frac{1}{4}$ lbs.,	4/6 doz.	} All Actual Weights.
$\frac{1}{2}$ „	7/6 „	
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GRAPE JUICE SALINE.

*A Refreshing, care-
fully prepared
Saline.*

In 8-oz. Stoppered Cheltenham,
8/- dozen.

6 dozen with Buyer's own
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Bulk, 7 lbs., 1/ per lb.
Package free.

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Claims to be a Specific for all Congestive and Inflammatory conditions of the Respiratory Apparatus, and will be found efficacious in

COUGHS AND COLDS, ASTHMA, BRONCHITIS,

Inflammation and Congestion of the Lungs, Pneumonia, Pleurisy, Whooping Cough, Croup, Diphtheria, Pharyngitis, Laryngitis, Catarrh, Sore Throat, Quinsy, Enlarged Tonsils, Hoarseness, Loss of Voice, Colds in the Head, Hay Fever, and all other Complaints of the Respiratory Organs.

PREPARED ONLY BY THE INVENTOR.

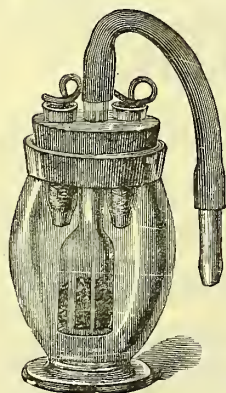
None Genuine except such as bears the above Trade Mark "SPIRONE" and the Signature of the Inventor upon the Bottle on the Label over the Cork, and on the Wrapper,

JOHN FRANCIS CHURCHILL, M.D. (Paris),*The Discoverer of the Specific Cure for Consumption, and of the Medicinal Properties of the Hypophosphites***Price 4s. 6d. and 11s. per Bottle.**

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THE SPIRONE COMPANY, Lim., Depot—17A Duke St., Manchester Square, LONDON, W.

BY ROYAL LETTERS PATENT, NO. 16,713.—DECEMBER 20, 1886.

**GODFREY'S****CHLORIDE of AMMONIUM INHALER**Catarrhal Throat and Ear Affections, Loss of Voice,
Bronchial Asthma, and Hay Fever.**The SIMPLEST FORM OF INHALER.**

VERY PORTABLE. CONTAINS NO WATER.

Silver Medal, Brussels Exhibition, 1888. Yields a plentiful cloud of Neutral Vapour, with little or no effort on the part of the patient.

SHIPPERS & LARGE BUYERS SUPPLIED ON LIBERAL TERMS**PRICE 7s. 6d. RETAIL.**May be obtained through S. MAW, SON & THOMPSON, London.
Illustrated Prospectus, with the "History of Chloride of Ammonium as a Remedial Agent,"
free by post. **SOLE MAKERS—****GODFREY & COOKE, 30 Conduit Street, LONDON, W.****FRY'S KINGSTON SPECIAL DRY PLATES****AND OTHER MANUFACTURES.**

POPULARITY GREATER THAN EVER! LIBERAL DISCOUNTS TO DEALERS.

SAMUEL FRY & CO., LIMITED, 5 CHANDOS STREET, CHARING CROSS, LONDON, W.C.

Works—KINGSTON-ON-THAMES.

Telegraphic address—"ENLARGEMENTS LONDON."

ESCHMANN BROS. & WALSH,

Inventors and Manufacturers of the

SOFT SILK FLEXIBLE CATHETER,**GUARANTEED WITH WOVEN EYES.**To be had of all Surgical Instrument Maker
and Wholesale Houses.

WINTER GOODS.

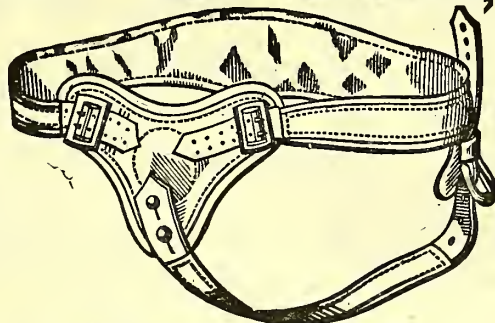
Before ordering Chest Protectors, &c., write for sample of HAYWOOD'S PATENT VENTILATING,

The only Chest Protector made on scientific principles.

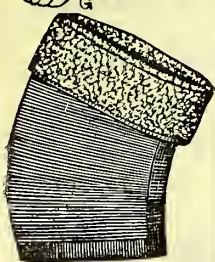
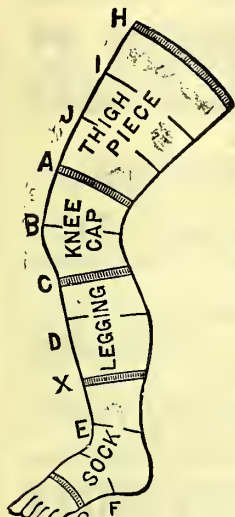
Manufactured from Pure Natural, Scarlet, and Medicated Pine Wool. Made also in Vests, Drawers, Combinations, Chest and Back Protectors, Bodices, Waistcoats, Sleeping Socks, Gout Gloves, &c.

Show Stand sent gratis with orders for not less than One Dozen.

Appliances for winter made also in Chamois Skins, Knitted Wool, Fleecy, &c.



EXCELSIOR TRUSS. Registered, No. 20,384.



Patent Pile, Protected, 14,618. The Pile lying over the Indiarubber Cords, protecting them and forming a smooth soft surface to the limb.

CHILBLAIN SOCKS.

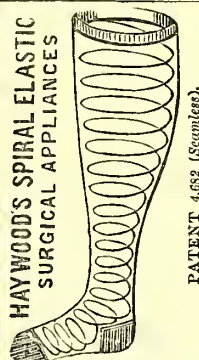
Fleecy Sleeping Socks and Knee Caps, Patent Pile Surgical Elastic Knee Caps, Socks, and Stockings.

ELASTIC SURGICAL SEAMLESS STOCKINGS

In Cashmere, Scarlet, Pine, and Natural Wool.

Hot Water Bottles and Covers. Respirators. Inhalers. Bronchitis Kettles. Throat Sprays. Waterproof Coats. Cloaks and Driving Aprons. Footballs, Skin Guards, and Athletic Appliances. Druggists' Sundries. Invalid and Nursery Appliances, &c.

J. H. HAYWOOD, CASTLE GATE, NOTTINGHAM.



LINT.

GAMGEE TISSUE.

(PATENT ABSORBENT GAUZE AND COTTON WOOL.)

ABSORBENT COTTON WOOL.

ROLL BANDAGES.

ROBINSON & SONS,

COTTON SPINNERS AND MANUFACTURERS OF

SURGEONS' LINTS, COTTON WOOLS, AND BANDAGES,

WHEAT BRIDGE MILLS, NEAR CHESTERFIELD.

Depot—55 Fann Street, Aldersgate Street, London.



TRADE MARK.

The Original

Arnicated

Corn and

Bunion

Plasters.

ESTABLISHED
A.D.
1846.

Please see that YOUNG' goods are supplied, as there are many worthless imitations.

HENRY YOUNG, Manufacturer, LONDON.



SURGEON-MAJOR BOURKE'S

FIRST FIELD DRESSING.

(LISTER'S COMPLETE WOUND DRESSING.)

The most approved, most convenient, most complete, and cheapest antiseptic dressing for any kind of wound.

A complete wound dressing for the surgery, hospital, accident ward, dispensary, ship's surgery, railway surgery, shipbuilding yard, mines, docks, and the battle-field.

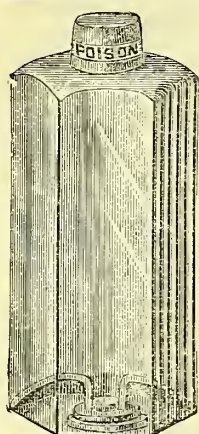
Specimens free from any wholesale house, or direct from

ANTISEPTIC DRESSINGS FACTORY, LADYWELL, LONDON, S.E.

Contracts undertaken and tenders given for the supply of Antiseptic and all other Surgical Dressings in any quantity.

Letters—Full address—JOHN MILNE, LADYWELL, LONDON.

Telegrams—"LISTERISM LONDON."



NEW POISON BOTTLE

**HERMES' PATENT.
REDUCTION IN PRICES.**

THIS Bottle supplies a want which has long been experienced by the Trade for a reliable and inexpensive Poison Bottle. The mouth of Hermes' Patent Poison Bottle is at the bottom of the bottle, and before its contents can be poured out the bottle must be reversed; this action being so entirely novel compels the most thoughtless person to reflect as to its contents.

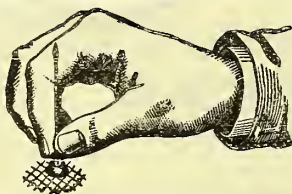
PRICES, PER GROSS, fitted with Boxwood-topped Corks, complete:—

3-oz., 15/- ... 4-oz., 16/- ... 6-oz., 17/6 ... 8-oz., 20/-

The Patentee has appointed as his Sole Manufacturers,

**E. A. HEARN & CO., GLASS BOTTLE MANUFACTURERS,
381-3 KINGSLAND ROAD, LONDON, E.**

Trade Mark.



Registered.

THE
**ASSOCIATION for the SUPPLY of PURE VACCINE LYMPH,
12 PALL MALL EAST, LONDON, S.W.
SOLE AGENTS FOR DR. WARLDMONT'S CALF VACCINE.**

Tubes, 2s. each; Half Tubes, 1s. each. Pomade in vials, 5s.

HUMAN VACCINE, from healthy children only, microscopically examined and source quoted. Tubes, two-thirds full, 1s. 8d. each; Tubes one-third full and Lancet-charged points, 1s. each; Pin-points, 1s. 1d. each. Eighteen charged Small Points, 5s. Tubes, two-thirds full (same as those mentioned above, but without source), in quantities for export, £5 per 100 Tubes. Pin-points uncharged, 1s. per dozen. Vaccine Ejectors, 1s. 3d. each, including postage. Vaccinations by appointment. P.O.O.'s (including postage, and crossed London and Westminster Bank), with orders, payable to **EDWARD DARKE, Secretary.**

Office hours, 10 to 4. Saturdays 10 to 2.

DISPENSING BOTTLES & PHIALS

WE NOW SUPPLY OUR CELEBRATED

6 and 8 oz. Bottles at 7/6 per gross.

3 „ 4 oz. ditto 6/6 „

All other Sizes and Kinds equally low.

I. ISAACS & CO.

GLASS BOTTLE MANUFACTURERS,

25 Francis St., Tottenham Court Road, London, W.C.

Established upwards of 50 years. Bankers: London and Westminster Bank.

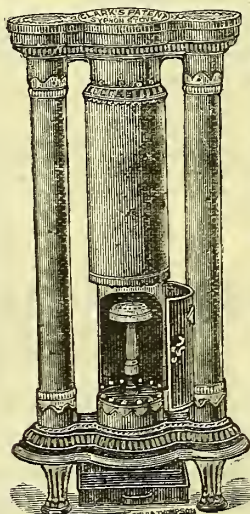
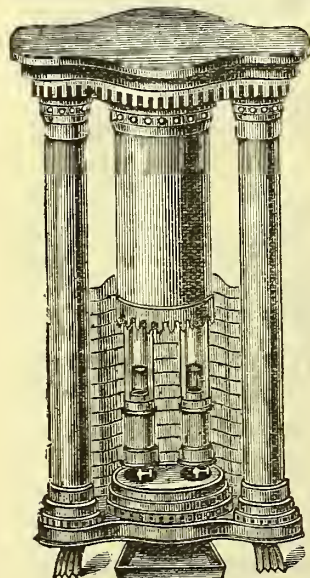
TO CHEMISTS AND DRUGGISTS.

AGENTS WANTED FOR THE SALE OF CLARK'S PATENT

“SYPHON” (REGISTERED TITLE) HYGIENIC CONDENSING GAS HEATING-STOVES.

NO FLUE REQUIRED. ARE FREE FROM SMELL OR SMOKE.

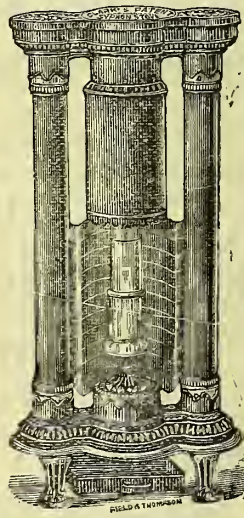
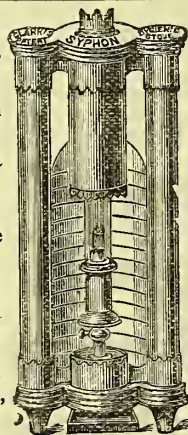
All injurious vapours are reduced to harmless liquid inside the Stove, and passed out at foot into a tray provided for that purpose.



For Use in Hospitals, Sick Chambers, Bedrooms, Halls, Conservatories, Churches, Schools, &c.

Specially suitable for patients suffering from Bronchial affections, as a moist atmosphere is obtainable when required.

For Terms, Particulars, and Prices, apply to



S. CLARK & CO., Patentees and Makers, Syphon Works, Park Street, ISLINGTON, LONDON, N.

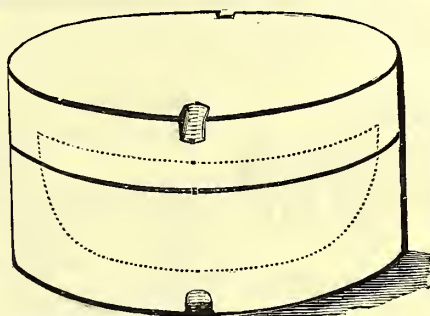
Telegraphic Address—“SYPHON STOVES LONDON.”

Wholesale Agents—Messrs. MAW, SON & THOMPSON, Aldersgate Street, London, E.C.

WILLIAM TOOGOOD'S WAREHOUSE AND SHOW ROOM, BURLINGTON BUILDINGS, HEDDON STREET, REGENT STREET, LONDON, W.

TOOGOOD'S IMPROVED PATENT EARTHENWARE COVERED POTS

Are claimed to be the most
perfect and convenient yet offered to
the Trade.



*Owing to the increasing demand
for our Patent Pots, we have in-
troduced a Special THIN Series
for Dispensing.*

*These Pots are beautifully
glazed and finished, and, being
very light, are specially adapted
for sending by post.*

ORDINARY THICKNESS—

1 dr.	2 dr.	1/2	3/4	1	1 1/2	2	3	4	6	8	ounces.
1/6	1/6	1/6	1/7	1/8	1/10	2/2	2/10	3/4	4/6	5/6	per doz.

THIN FOR DISPENSING—

1/7	1/8	1/10	1 1/2	2	3	4	6	8	ounces.
			2/-	2/4	3/	3/8	5/-	6/-	per doz.

Forwarded Free to all parts of the World on application, enclosing business card.

WILLIAM TOOGOOD'S NEW ILLUSTRATED PRICE CURRENT

OF

Glass Bottles, Glassware, Earthenware,
Apparatus, Implements, and Utensils,
FOR THE USE OF CHEMISTS AND DRUGGISTS.

DRUGGISTS' SUNDRIES OF ALL KINDS.

Colonial and Foreign Enquiries and Correspondence solicited.



R. H. BARRETT,

Flint Glass Bottle Works,
THE OVAL, CAMBRIDGE HEATH, LONDON, E.

For Beauty, Cheapness, and Efficiency R. H. BARRETT'S

WATCH SMELLING-SALT BOTTLES

EXCEL ALL OTHERS IN THE MARKET.

The Caps are all fitted with **INDESTRUCTIBLE WASHERS**, to resist the action of Ammonia and retain the strength of the Salts.

Price, assorted white and coloured, 10/6 per gross (in 5-gross lots).

Chemists' and Perfumers' Bottles in great variety, Plain or Stoppered.

Telegraphic Address—"FOREFRONT LONDON." [1]

STOKES' PATENT CHECK TILL SYSTEM

HAS

SIX ADVANTAGES

UNKNOWN IN ANY OTHER TILL SYSTEM.

Price only **£3** Complete.

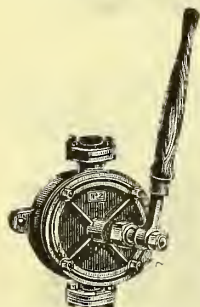
FULL PARTICULARS ON APPLICATION TO

G. R. STOKES & CO., LIM.
HANLEY, STAFFS.

PONTIFEX & WOOD, LIM.

SHOE LANE,
LONDON, E.C.

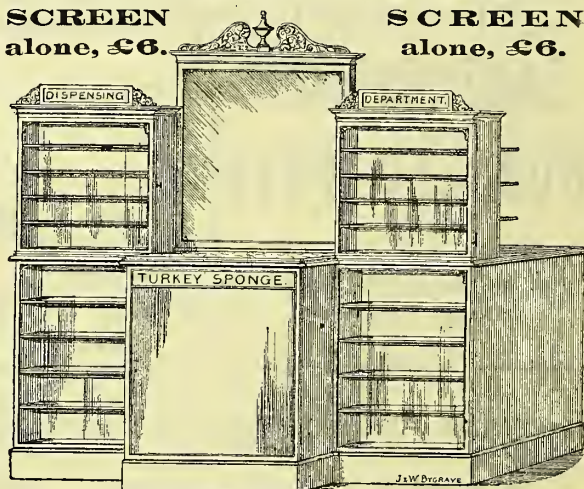
THE 'FARRINGDON' NEW PATENT PUMPS.



Made in various materials, suitable for Hot and Cold Liquor, Wines, Spirits, Oil, Vinegar, and Acids generally.

SCREEN
alone, £6.

SCREEN
alone, £6.



The above represents a solid mahogany Dispensing Screen and glass-fronted Counter. The Screen has a glass case at each side, with plate-glass tablets and gold writing on top—"Dispensing Department"; and a plate-glass mirror with marble slab in centre, with mahogany ornamental wood on top. Doors of screen are glazed with best 21-oz. glass, and inside the cases are polished black, with three long shelves right along the back for dispensing bottles. The Counter opens in front with three solid mahogany doors glazed with best 21-oz. glass, centre for sponges underneath. Counter at the back is fitted with a nest of deal drawers and shelves. If 6 feet long, and 5 feet high to top of cases, complete, £11 10s.

J. & W. BYGRAVE,
SHOP FITTERS,

111 Shepherdess Walk, City Road, LONDON, N.

For further particulars please send Business Card.

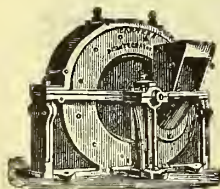
CARTER'S DISINTEGRATORS

Will Pulverise, Granulate, or Shred almost any Mineral, Vegetable, or Animal Substance.

NEARLY 1,300 IN USE

IN ALL PARTS OF THE WORLD.

For Grinding Sugar, Bark, Linseed, Ginger, Pepper, Spices, Salt, &c., this Machine is invaluable. Made in 9 Sizes. Illustrated Catalogue may be obtained on application.



Samples of ANY Material will be Ground free of charge.

J. HARRISON CARTER, 82 Mark Lane, LONDON, and 3 Rue du Louvre, PARIS.

Telegraphic Address—Milling London.



MELBOURNE, 1880.



SYDNEY, 1879.



PHILADELPHIA, 1876.

KILNER BROTHERS,

GLASS

BOTTLE

MANUFACTURERS.



PARIS, 1878.



PARIS, 1875.

EXCELLENT
QUALITY.
EXTENSIVE
VARIETY.
PRICES LOW.



Dispensing.



LONDON, 1862.

TELEGRAPHIC ADDRESS—
"BOTTLES
LONDON."

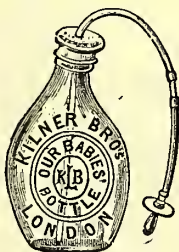
TELEPHONE MESSAGES, No. 7509.



Dispensing.

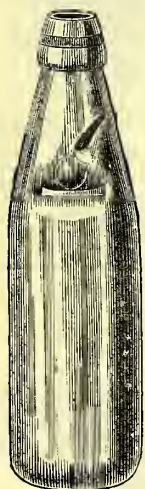
QUOTATIONS
AND
SAMPLES SENT
ON
APPLICATION.

FEEDING, PICKLE,
DRUG, OIL,
SAUCE, VINEGAR
BOTTLES.



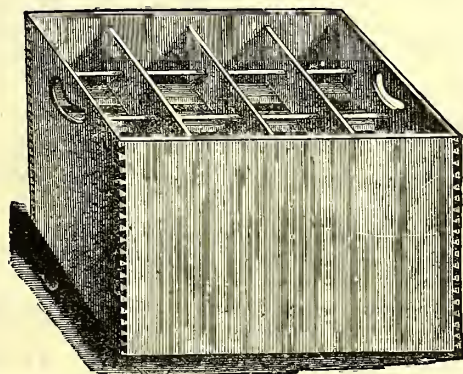
Feeding.

WINE, SPIRIT,
BEER,
CONFECTIONERY
BOTTLES.



Mineral Water
BOTTLES.

VAN



BOXES, CASES,

&c.



Mineral Water
BOTTLES.

No. 3^A GREAT NORTHERN GOODS STATION, KING'S CROSS, LONDON.

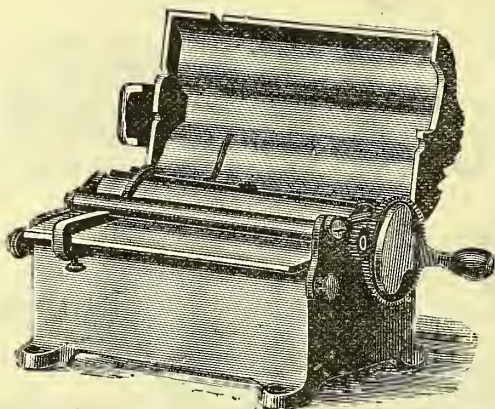
JOHN HOLROYD & CO., LIM.

Engineers, Tool Makers, and Machinists,
TOMLINSON ST. WORKS, HULME,
MANCHESTER.

**MACHINES FOR MAKING
COMPRESSED TABLETS.**

MACHINES FOR GUMMING

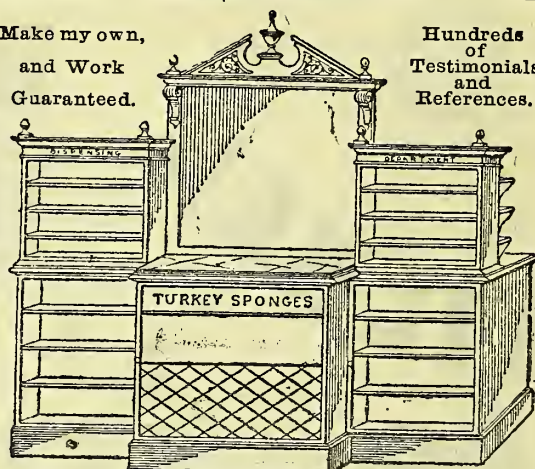
Either an entire surface or the edge only of Labels,
Wrappers, &c.



Machines Built to Contract for Inventors and
Merchants.

Make my own,
and Work
Guaranteed.

Hundreds
of
Testimonials
and
References.



The above represents a Plate-glass and Mahogany Dispensing Screen and Counter. The cases on each side of the marble slab over sponge case have silvered glass backs, and are fitted with movable shelves; the cases in front of counter are also fitted with movable shelves. The mahogany used is beautifully figured. At back under counter fitted with Drawers for Corks, Labels, Paper, &c., and the back of screen with three shelves the entire length for Bottles.

6 ft. long, complete, £16; if Screen only, without Counter, £8 10s.

ELKANAH NATALI

(Established 20 Years),

SHOW CASE MAKER AND SHOP FITTER,
207 OLD STREET (Shoreditch End), LONDON;
Workshops—HENSON STREET, E.C.
(ONLY ADDRESSES).

No connection with any other house of the same name.
PLEASE ADDRESS IN FULL.

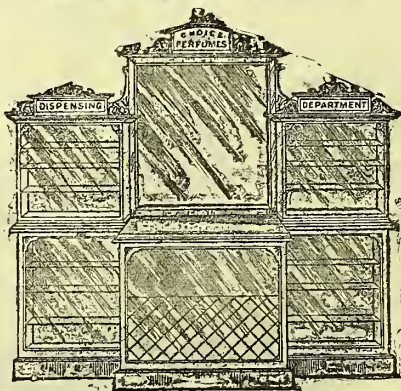
“THE CHEMIST” DISPENSING COUNTER.

6 feet long by 2 feet wide .. £24
If the Dispensing Screen only, £12

This handsome Dispensing Counter is manufactured in Spanish mahogany, and of the best workmanship, so that it will stand any climate. The counter has a solid mahogany top, and plate-glass case front. The centre part fitted to take sponge. A mahogany screen on top, consisting of two plate-glass cases, with shelves inside, and large plate-glass mirror in the centre, and three glass tablets with gold writing in ornamental mahogany carved work. The back of screen fitted with small shelves and a glass poison cupboard. The inside of counter fitted with strong counter drawers, label and cork drawer, open shelves, &c.

BOWLING & GOVIER

Manufacturers of High-class Shop Fittings,
GUN ST., BRUSHFIELD ST.
BISHOPSGATE, E.C.



NOTICE TO THE TRADE.

In consequence of inferior Second-hand Goods being sold for our make, we have found it necessary to protect our reputation for best work with a Trade Mark, as above, and unless goods are so stamped we cannot be answerable.

GEORGE TREBLE & SON,
FOR
CHEMISTS' SHOP FITTINGS & SHOW CASES.

SHOPS FITTED FROM £50.

DESIGNS AND ESTIMATES SUPPLIED IN TOWN OR COUNTRY.

ESTABLISHED FORTY YEARS.

HIGHEST REFERENCES CAN BE GIVEN.

THREE PRIZE MEDALS.

Steam Factory: 27 CANAL ROAD, HOXTON, LONDON.

ROTARY PILL
MACHINES

Fig. A.

Fig. A.—This invention consists in a novel and improved arrangement of Machinery, whereby any description of Pill Mass can be converted into Pills, at the rate of from 15 lbs. to 40 lbs. per hour, according to the size of the Machine used.

Fig. A.—No. 1 .. £12 12s.
No. 2 .. £15 15s.
No. 3 .. £20 0s.

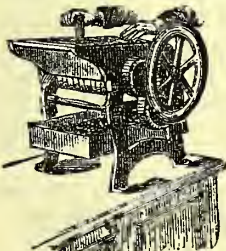


Fig. B.

Fig. B.—A small useful Machine capable of making 10 lbs. of Pills per hour, particularly adapted for persons making small quantities, at £7 15s.

Press suitable for same, £2 15s.

Any of the above can be made to cut two or three different size Pills, at an additional cost for extra Rollers and Plates.

PIPING PRESSES

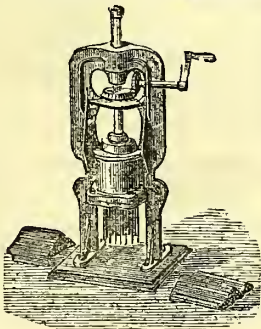


Fig. C.

Fig. C. is the improved Press for Piping, by means of which a great quantity of Mass can be Piped in a few minutes, truer than by the old method of rolling.

No. 1 £ 0s.
Fig. C.—No. 2 .. £5 10s.
No. 3 .. £8 0s.

J. W. PINDAR'S NEW ROTARY PILL MACHINES

As used to this date by Messrs. Holloway, Cockle, Cox, and all the principal Pill Makers in Europe, Asia, Africa, America, and Australia.

J. W. PINDAR'S
New Rotary
HORSE BALLS
MACHINES.

These Machines are on a similar principle to the Rotary Pill Machines that have given such great satisfaction in all parts of the world.

Price £8 15s.

Rollers for other sizes, Riggers for Steam Power, also Gas Apparatus if required, supplied at a small additional cost.

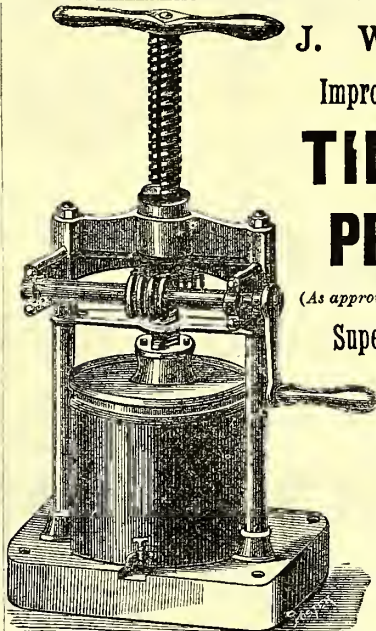
Mr. J. W. PINDAR, 224 Strand, 13th March, 1866.

Sir,—I have much pleasure in stating that the Pill Machine which you made for me answers remarkably well, as the Pills are far better made than those by hand-machines, and with much less waste. I can, therefore, confidently recommend it as a very excellent one, a great saving of labour and, consequently, expense.—I remain, yours faithfully,
THOMAS HOLLOWAY.

3 Crane Court, Fleet Street, Feb. 14th, 1871.

To Mr. J. W. PINDAR,

Dear Sir,—We have now used your Rotary Pill Machine about six years, and find it answers better than any we had previously used, and makes the Pills of a very regular size.—Yours truly,
T. WHELPTON.



J. W. PINDAR'S

Improved Double-Action

TINCTURE
PRESSES

(As approved of by Wholesale Chemists.)

Superior to Hydraulic,

On account of holding the pressure.

Prices for One Gallon
£3 10s.

For each additional
Gallon, £1 10s. extra.

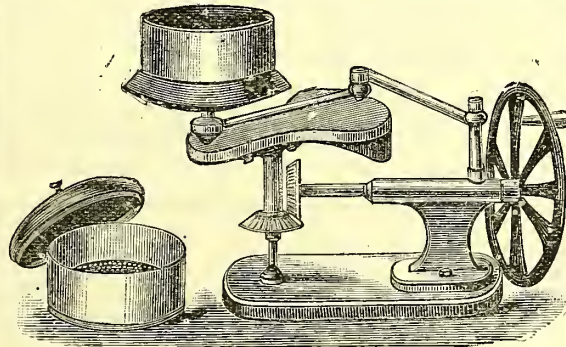
Directions for use
forwarded with each
article.

338 Oxford St., opposite Great Portland St.,
Mr. J. W. PINDAR, Feb. 11th, 1871.
Sir,—The Rotary Pill Machine and Press which we had from you (for a special order) answered very satisfactorily.—We are, Sir, yours respectfully,
JOHN BELL & CO.

29 Murray St., New York, and Farringdon Rd.,
Mr. J. W. PINDAR, London, Nov. 9th, 1880.
Dear Sir,—Your letter of inquiry came duly to hand. As I always told you, the Pill Machine in operation at my London warehouse has given entire satisfaction. So have those we are using in this count, y. We can make smooth, round Pills of uniform size at a very small expense. I can safely say that your Pill Machine is all that you claim it to be—a perfect Machine.
Yours truly, A. J. WHITE.

NEW PATENT
"ECCENTRIC" PILL COATER.

Invented and made by J. W. PINDAR, Patentee.



PRICES.

No. 1.—For 2 lbs., £3 5s.; sifter for same, 7s. 6d.
No. 2.—For 5 lbs., £4 15s.; sifter for same, 15s.
No. 3.—For 10 lbs., £6 15s.; sifter for same, £1 5s.
No. 4.—For 20 lbs., on Iron Standards for Steam, Gas, or other power, £15 15s.; sifter for same, £2 5s.

The smallest Machines can be worked by Steam Power at a small additional cost.

By an entirely new arrangement of mechanism this machine is constructed in a manner which supercedes all others, as, owing to its "Eccentric" motion, the Pills, which may be coated with Pearl, Silver, Gold, or Sugar, &c., &c.—are thoroughly separated from each other during the process, and retain their original spherical form, whilst being thrown round the receptacle with remarkable velocity.

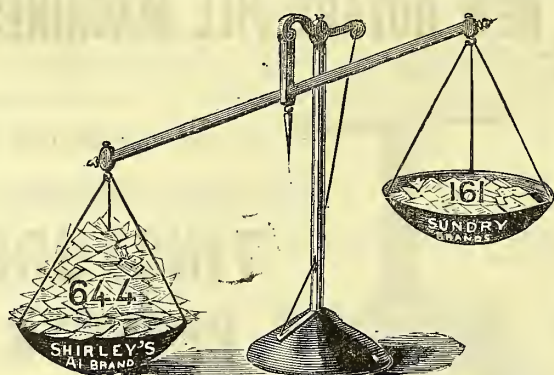
These machines are equally adapted for coating large or small quantities; thus, a machine constructed for and suitable for coating 20 lbs. will coat 1 lb. only with equal efficacy, and in the most satisfactory manner.

Each machine is supplied with a Drug or Powder Sifter, to be attached if required, and which, fitting to top of Pill Receptacle, is subject to the same "Eccentric" motion as above mentioned.

This addition will be found of great advantage in the Laboratory, being both efficient and compact.

Testimonials from all parts of the World may be seen on application to

J. W. PINDAR, 75 New Church Rd., Camberwell, LONDON.



FACTS SPEAK FOR THEMSELVES!

Results of a Voting recently held in the pages of the *British and Colonial Druggist*, as to the most popular maker of various articles sold by Chemists, reveal the following indisputable facts under the heading of **Menthol Cones** :—

Votes for—

Hockin, Wilson & Co. 65
Christy & Co. 63
Maw 28
Castle Brand 5

161

Votes for

Shirley's

A1 Brand 644

So that out of 805 votes, **SHIRLEY'S BRAND** obtains 80 per cent., whereas all other brands *put together* obtain only 20 per cent.

THE REASON IS NOT FAR TO SEEK.

Many correspondents write as to their trade in Menthol Cones increasing, one stating, "I think the handsome pedestals sent out by the various firms are largely the cause." *This is perfectly true.* Every endeavour has been made to assist the retailer in selling

SHIRLEY'S A1 BRAND MENTHOL CONES,

By giving Show Cases, Dummy Cones, and, lately, a China Figure, as show stands, all of which ideas have been carefully copied by other makers. Again, hundreds of thousands of hand bills have been circulated throughout the country, drawing attention to the uses of Menthol, so that no other result could be expected but an increase in sales. *The Trade is, therefore, earnestly asked to support the house which has REALLY MADE THE SALE OF MENTHOL WHAT IT IS.* Shirley's A1 Brand has long been recognised as the leading brand, which is confirmed by above voting, and in the future, as in the past, no effort will be spared to assist the retail trade.



*The Chemist and Druggist says:—*Mr. Arthur W. Shirley has produced a very attractive biscuit china figure, represented in the annexed engraving. The advertisement is effective without being at all vulgar, and the little crier, we expect, will soon be a familiar figure about the country.

THIS ELEGANT BISCUIT-CHINA FIGURE, AN ORNAMENT TO ANY SHOP,

GIVEN AWAY

To Purchasers of 25/ worth of

SHIRLEY'S A1 BRAND MENTHOL

OR TWO IF 40/ ORDER IS PLACED.

The following special parcels have been arranged to suit all classes of trade :—

PARCEL 1. 25/. 4 doz. 2d. 1 doz. 3d. 2 doz. 3½d. 3 doz. 4d. 2 doz. 6d.	PARCEL 2. 25/. 4 doz. 6d. 2 doz. 4d. 1 doz. 1s.	PARCEL 3. 25/. 3 doz. 3d. 2 doz. 1s. 1 doz. 4d.	PARCEL 4. 25/. 1 doz. 9d. 2½ doz. 1s. ½ doz. 1s. 6d.
PARCEL 5. 40/. 4 doz. 2d. 2 doz. 3d. 3 doz. 3½d. 5 doz. 4d. 4 doz. 6d.	PARCEL 6. 40/. 5 doz. 6d. 3 doz. 4d. 2½ doz. 1s.	PARCEL 7. 40/. 4 doz. 6d. 4 doz. 4d. 1 doz. 9d. 2 doz. 1s.	PARCEL 8. 40/. 4 doz. 1s. 2 doz. 9d. ½ doz. 1s. 6d.

By calculating what each of the parcels would realise when sold, it will be found that they yield an average profit of 80 per cent. to the retailer on his outlay.

The following Patterns can be well recommended as Saleable :—

No.	Pattern	Doz.	Dcz.
No. 6.	Boxwood Pedestal, printed directions	3/6	
" 11a.	" " " "	3/0	
" 14a.	" " " "	6/3	
" 17s.	Draughtsman	3/9	
" 17L.	" " " "	6/6	
" 17L.	Ebony	6/6	
" 100.	2d. Willow Round Box	13/ grs. 1/5	
" 101.	3d. " Acorn, 2 doz. on card	17/ " 1/10	
" 32.	Quite new. Menthol on boxwood mount, covered with a metal composition, assorted colours, in glass-lid box: very attractive	per doz. 3/-	
No. 111.	Large Boxwood Acorn, plain box		7/0
" 112.	Boxwood Draughtsman		3/3
" 113.	" Cartridge		3/6
" 113.	" reversible		3/6
" 107.	Willow Pedestal, varnished white		2/3
" 109.	" large		2/6
" 110v.	1d. Vase Shape, 3 doz. on card		gross 7/0
" 114.	2d. imitation Boxwood Pedestal		
"	3 doz on card		16/
" 115.	3d. imitation Boxwood Draughtsman, 2 doz. on card		18/

ORDER a Card of A1 MENTHOL AND COCAINE TOOTHACHE TUBES, which you will find give great satisfaction. They are neatly put up in card cases, one dozen mounted on a card, 3/6 per dozen.

ARTHUR W. SHIRLEY, 30 PATERNOSTER SQUARE, LONDON, E.C.

And 11, 12, & 13 ROSE STREET, NEWGATE STREET, E.C.

ANGLO-AMERICAN OIL COMPANY, LIM.

LONDON.

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GREAT YARMOUTH.

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HEAD OFFICES—16 ST. HELENS PLACE, BISHOPSGATE ST., LONDON, E.C.

American Refined Petroleum.

The long established superiority of "**Tea Rose**," "**Royal Daylight**," "**White Rose**," and "**Westminster**" American Petroleum Oils, manufactured by the Standard Oil Company of the United States, is well known to the Trade and to Consumers, and no Oils are so widely and justly celebrated. Their superior burning qualities, freedom from odour and from any tendency to smoke, and their general excellence, have placed them above comparison with any and all other brands.

In order to meet the largely increasing demand for these oils, and the better to supply the Trade generally, we have arranged to import them from the United States in bulk as well as in barrels. We shall fill the Oil which we import in bulk into barrels at our own wharves, and as our cooperage facilities are modelled upon the best American methods, buyers will receive the Oil in tight and clean packages.

Our Tank Steamers, "**Manhattan**" and "**Bayonne**," in their construction, arrangements, power and size, are in advance of any tank steamers afloat, and each has a carrying capacity of 4,000 tons, equivalent to 28,000 barrels of Oil by each steamer.

We shall keep large stocks of these Oils constantly on hand at all our Importing Centres and Depôts, and in this manner be able to supply the Trade promptly. Being the representatives in the United Kingdom of the Standard Oil Company, of America, we are in the best possible position for supplying the trade on the most favourable terms.

To cover the special requirements of London buyers, we have completed the construction of a large Storage Wharf at Purfleet, which will be worked in connection with our Depôts at—

AILSA STREET, BOW CREEK, E.

CANAL WHARF, CHALK FARM ROAD, N.W.

ALBANY WHARF, ALBANY ROAD, CAMBERWELL, S.E.

GENUINE INSECT POWDER

Dalmatian, from Closed Flowers.
In Original Kegs, 180s. per cwt., 1s. 8d. per lb.

G. VOGT,

WHOLESALE AND EXPORT DRUGGIST,
12 Laurence Pountney Lane, Cannon St., London, E.C.

TELEGRAMS: "ALSACE LONDON."

Samples and Price Lists on Application.

HAMBRO SPECKLED



TRADE MARK
REGISTERED.

All Orders by Post receive immediate attention.

LEECHES!

Warranted Healthy. Wholesale
and for Exportation. Direct
from Marshes.

FITCH & NOTTINGHAM,

LEECH BREEDERS,
4 CANONBURY SQUARE, LONDON, W.

ESTABLISHED 1833. HORSES.—LIEUT. JAMES'S BLISTER.

CAUTION.

The annexed Label is at
the top of every Pot of
the ORIGINAL and only
GENUINE BLISTER.



The Messrs. Barclay & Sons,
95 Farringdon Street, London,
and Messrs. Raines & Co.,
Edinburgh, are now and have
been Agents 56 years.

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157 Queen Victoria Street; Newbery & Son, 37 Newgate Street; Evans,
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Road, Finsbury; Sanger & Son, 150 Oxford Street; Millard & Sons,
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And by all Chemists, in Pots, 1/6, 2/9, 5/9, and 16/.

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W. H. JAMES, SOLE MANUFACTURER, STANFORD, FARRINGTON, BERKS.
Advertised in "Bell's Life" 54 years. Beware of Spurious Imitations.

BATTLE'S VERMIN KILLER.

TRADE MARK.



{ Mice eat it readily and
Die on the spot.

Has an immense Sale, and wherever introduced never fails to give satisfaction.—Mice appear attracted to it as by magic, eat it readily, tumble over, and die on the spot. Rats usually die in their runs.—Families troubled with Vermin may be cleared at once, either from Stacks, Houses, or Ships.

TESTIMONIALS.—Thousands might be published.

From Mr. THOMAS COLTON, Agent for Selby.—A friend of mine purchased a Packet of your VERMIN KILLER last night, doubting its efficacy to-day he called in to say that he had found fifteen dead mice, and had only used part of a packet.

From Mr. EDWARD STUBBY, Flemington Mills.—I duly received by post the Packet of your VERMIN KILLER, and found it represented in your advertisement. It speedily destroyed all the mice in my granary. I enclose 2s. for two more Packets.—Leeds, November 5th, 1887.—I have tried BATTLE'S VERMIN KILLER, and have found it most effectual in clearing my premises of LARGE QUANTITIES OF RATS.—THOMAS S. CROSLAND.—Mr. Stead.

Sold in Packets, 8d., 6d., and 1s. each.

SOLE PROPRIETOR,

Mr. J. R. BATTLE, Chemist, Lincoln, England.
No Chemist or Storekeeper should be without a supply.

WALKER, TROKE & CO.

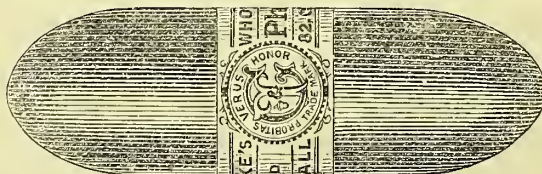
WHOLESALE AND EXPORT DRUGGISTS

82 CITY ROAD, LONDON, E.C.

SOLE MAKERS OF

C. F. H. SKELTON, Esq., M.R.C.V.S.L.,
Leyton, Essex,

Writes:— April 5, 1889.
I have great pleasure in saying that your Quinine Tonic Ball exceeded my anticipations. Horses in low condition, and those recovering from illness, showed marked improvement after treatment with them. The Quinine Tonic Ball should prove a boon to all owners of horses.



J. G. CROSS, Esq., M.R.C.V.S.L.,
Shrewsbury,

Writes:— May 20, 1889.

I have used your Quinine Tonic Balls, and consider them invaluable for animals recovering from any severe illness, specially from influenza.

GABRIEL & TROKE'S QUININE TONIC and STIMULATING GELATINE CAPSULED HORSE BALLS

(Registered No. 81,291),

Alterative, Condition, Cordial, Cough, Diuretic, Fever, Physic, and Worm Balls.

GABRIEL & TROKE WERE THE FIRST MAKERS OF GELATINE CAPSULED HORSE BALLS.

CARBOLIC POWDER, £4 TON.

1-ton lots and upwards.

CARBOLIC PINK POWDER, 5/-, 7/6, and 10/- per cwt., in bags or casks.

WHITE CARBOLIC POWDER, 10 %, 15 %, and 20 %, equally cheap.

HANDSOME LARGE DECORATED BLACK AND GOLD TIN BOXES.

Holding 1½ lb. (usual 1/- size), 4/6 doz. Ditto, LARGE SIZE (usual 1/6 size), holding about double quantity, 6/- doz.

PALE CARBOLIC ACID, 99 per cent. (No. 5), and CHLORIDE OF LIME below market prices

CRUDE CARBOLIC ACID (Brown), 1/-, and 1/6 Gallon; also in patent stoppered bottles, labelled.

SANITARY FLUID or CREOSOL (to be used with 100 parts of water, making a *milky fluid*), half usual prices.*All goods delivered free in London or suburbs, or to rail or docks. THE CHEAPEST HOUSE IN THE TRADE.*

HAMILTON & CO., HIGH STREET, WANDSWORTH, LONDON, S.W.

WILEY'S CHEMICAL ESSENCE

FOR

LAMENESS IN HORSES.

Agents Wanted in every Town. Handbills, with Name and Address, supplied gratis.

50 YEARS' UNBROKEN SUCCESS.

SOLE MAKER & PROPRIETOR, J. ROOKLEDGE, CHEMIST, EASINGWOLD, YORKS.

TO BE HAD OF USUAL WHOLESALE HOUSES.

HOLLOWAY'S PILLS & OINTMENT

Have the Largest Sale of any Medicine in the World.

MANUFACTURED ONLY AT

Professor HOLLOWAY'S Establishment,
78 New Oxford St. (late 533 Oxford St.), London,

And sold at 1s. 1½d., 2s. 9d., 4s. 6d., 11s., 22s., and 33s. each Box or Pot.

Chemists and Druggists selling "Holloway's Pills and Ointment" can on application to the above address, or to the Wholesale House with whom they deal, be supplied free of charge with Handbills and Posters with their name and address printed at foot.

Wholesale Terms see List of "Proprietary Articles" in most Price Currents.

GENERAL ACCIDENT BUSINESS

AGENTS WANTED.

Chemists and Druggists invited

TO APPLY TO

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CORPORATION, LIMITED,

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IN ALL THE ART SHADES.

For all kinds of decoration on Wood or Iron. Dry with a surface like Porcelain. Sold in small or large Tins, or in bulk. Prices and shades on application.

WHITE LEAD, ZINC WHITE,
PAINTS & COLOURS OF ALL KINDS.MIXED PAINTS READY FOR USE,
In Tins, 1, 2, 4, 7, and 14 lbs. each.

HIGH-CLASS VARNISHES

Of all kinds, for Coachbuilders, Decorators, &c. OIL BOILERS, REFINERS, & MERCHANTS. Export Orders receive special and prompt attention.

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The Needle is only ½ inch long, and being enclosed by a metal cup prevents the escape of the injection. It causes very much less pain than the ordinary syringe. The syringes are fitted with our patent "Asbestos" pistons, a great improvement over leather pistons, as no lubricant is required, and always ready for use.

PRICES:—

In case, plated	s. d.
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S.V.R.PURE GRAIN SPIRIT 56 O.P., B.P., 18/5, used by the principal Wholesale Druggists.

Do.

Do. DOUBLE DISTILLED 18/9

Cash with Order.

Reductions for Quantities.

SAMPLES FREE.

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S.V.R.**SPECIALITY FOR PERFUMERY.**This pure grain spirit, which has been thrice rectified and filtered through charcoal, is being largely used in making high-class Perfumes.

Price, 19/-, 56 o.p.; 19/6, 60 o.p. Cash with order.

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CALE ST., CHELSEA, S.W.

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AT LOWEST PRICES.

WRITE FOR QUOTATIONS.

PURE SPIRITS OF WINE.(STEAM STILL)
ONLY.

60 o.p., 18/9 per gall.; 56 o.p., 18/3 per gall.

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ORANGE (suitable for Quinine), GINGER, RAISIN, COWSLIP, CHERRY, &c.

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MANUFACTURERS OF

Glass Paper, Emery and Glass Cloth; Emery, Black Lead, Emery Wheels, Pumice,
Putty Powder, Crocus, Urn Powder, Tripoli, Rouge, Plate Powder, Steel Polish,
Furniture Polish, Knife Boards, Brunswick and Berlin Black, &c.**OAKLEY'S WELLINGTON KNIFE POLISH,**Prepared expressly for Oakley's Patent Rubber Knife Boards, Buff Leather Boards, and all the Patent Knife Cleaning Machines.Sold in Canisters with perforated Tops to prevent waste, at 1d., 2d., 3d., 6d., 1s., 2s. 6d., and 4s. each.**OAKLEY'S NON-MERCURIAL SILVERSMITH'S SOAP,**For Cleaning and Polishing Silver, Plate Glass, Marble, &c. Tablets, 6d. each.**OAKLEY'S "POLYBRILLIANT" (Registered).**A Magic Pomade for Cleaning Brass, Copper Tin, Pewter, Britannia Metal, &c. Never becomes dry and hard like other Metal Pastes.
Tins 1d., 2d., 3d., and 6d. each.**WELLINGTON BLOCK BLACK LEAD,**In 1d., 2d., and 4d. Blocks, and 1s. Boxes.**WELLINGTON EMERY & BLACK LEAD MILLS,** Westminster Bridge Road, London, S.E.Highest award and Prize Medal, Philadelphia Exhibition, 1876; and Boston, 1883. Gold Medal, Crystal Palace, 1884

BEESWAX.

W. H. B. WHITE { put up in 2-lb. parcels in cases of 54 lbs. | W. H. B. REFINED { in 2-lb. cakes in cases 130 lbs. 1-lb., ½-lb., ¼-lb., and oz. cakes.

The purity of these goods is certified by the following eminent chemists: S. P. Sharpless, State Assayer, Boston; J. W. Taylor, Associate of the Society of Public Analysts of Eng., Montreal, P. Q.; Edward Davies, F.C.S. and T. I. C. and C., Royal Institution, LIVERPOOL, Eng.; Bernard Dyer, D.Sc., F.C.S., F.I.C., Member of the Society of Public Analysts, 17 Great Tower Street, LONDON, E.C., Eng.; Wm. T. Wenzel, Analyst and Assayer, San Francisco, Cal., and may be obtained of any of the leading Wholesale Druggists in the Northern and Midland Counties.

CRUDE BEESWAX,
Foreign and Domestic.

CERESINE,
Yellow and White.

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Refined, all Grades.

We will deliver our goods in 5-cwt. lots ex quay, in any city which is the Terminus of a Steamship Line throughout the Kingdom, without trouble or expense to the Buyer.

CABLE ADDRESS—"BOWDLEAR BOSTON."

OZOKERITE,
In Bales.

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or BRAZIL WAX.

JAPAN WAX
in Cases.

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Office and Warehouse—36 CENTRAL WHARF.

THE ORIGINAL GENUINE EAST INDIA OIL OF MUSTARD SEED

Is strongly recommended as a safe and effectual remedy in cases of

RHEUMATISM, GOUT, RHEUMATIC GOUT, SCIATICA, LUMBAGO, HEADACHE, PAINS IN THE STOMACH, SPASMS, BRUISES, CHILBLAINS, &c.

RETAIL IN BOTTLES, 1s. EACH.

Imported by J. H. & S. JOHNSON, Wholesale Druggists, 6, 8, and 10 WHITECHAPEL, LIVERPOOL.

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KNIGHT'S PATENT 'RELIANCE' GUM AND LIQUID GLUE.

In 1d., 3d., 6d., 9d., and 1s. Bottles.

**THE CHEAPEST AND STRONGEST ADHESIVES
IN THE MARKET.**

Warranted Absolutely Free from Acid.

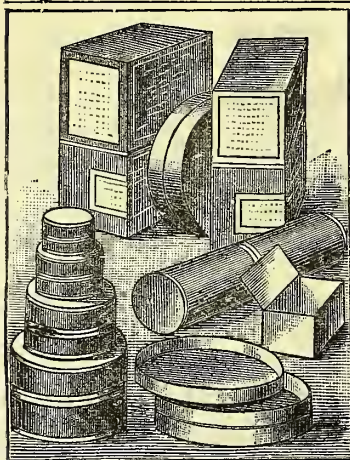


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Pleated Paper, from 8d.
per Gross.

LONDON:

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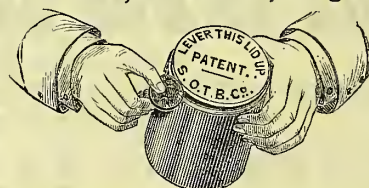
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THE SELF-OPENING TIN BOX CO.

(Griffin's Patents.)

Albion Tin Works, York Road, King's Cross, N.

The largest
Tin Box
Works in the
Kingdom.
Ten Prize
Medals
have been
awarded.



Tins of
all kinds for:
Oils, Paints,
Drugs,
Tea, Coffee,
Milk, Syrup,
Preserves,
Vaseline, &c.

Persons requiring Self-opening Tin Boxes are invited to apply for Press Notes and the opinion of the celebrated Patent Counsel, Mr. Theodore Aston, Q.C., as to the merits of the invention of Self-opening Tin Boxes. From these they will see the scandalous manner in which the Inventor has been treated, rendering the word "Justice" a mockery. It is hoped that all lovers of fair play and honourable dealing will remember this when giving their orders.

CHALMERS' PATENT SAMPLE AND PARCELS POST BOX.

THE ONLY BOX

That fulfils ALL the requirements of the POST OFFICE.



Is fastened INSTANTLY.
Cannot open by accident.
Is immensely strong.
Has no corners.
No seams, joints, nor solder.
Nothing to scratch or tear letters.
Is practically air-tight:—Is used
for Flour, Cherry Blossom,
Sanitas, and Soap-Powders.
Dispenses with string, bags, and
paper.
Saves 19 minutes out of 20.

94,500 SOLD IN THREE MONTHS

SAVING THEIR OWN COST.

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"MYRTLE GROVE" TOBACCO

In 1-oz., 2-oz., and 4-oz. Packets, and $\frac{1}{4}$, $\frac{1}{2}$, 1 lb. Tins only.



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ESTABLISHED 150 YEARS,

SNUFF, TOBACCO, AND SEGAR MANUFACTURERS.

Write for List of Specialities.

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CIGARS & CIGARETTES.

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Tobacco, Cigar, & Cigarette
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KINGSLAND RD., LONDON, N.E.

Sole Manufacturers of the Celebrated
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"ROYAL CHARTER"

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"UPPER CRUST."

Sold in Packets only.

Those who deal in these Goods, or intend doing so,
should write to the above Manufacturers for
Price List.

T. & F. J. TAYLOR'S

AERATED WATERS,
Newport Pagnel.

ESTABLISHED 1835.

**SODA, POTASH, SELTZER, AERATED (without
Alkali), and LITHIA WATERS,
LEMONADE AND GINGER ALE.**

*Each Bottle is protected by a Label bearing the Signature
of the Firm.*

Purity and Excellence of the Water certified by Analysis
by Professor ATTFIELD, Ph.D., F.O.S.

BUNION PLASTERS.

For excellent finish and carefully selected White Felt our Plasters will be
found equal to the best produced; in adhesiveness and flexibility they sur-
pass all other makers'. We make them antiseptic, which is a very valuable
and desirable quality.

In glass-top boxes, containing 72 Plasters, oval, square, round, or assorted.
Thin 2/, Thick 2/9 per box.

"THIN (in boxes containing 6 Plasters)	..	..	2/8 per dozen.
"THICK "	"	12 "	.. 5/4 "
" "	"	6 "	.. 3/6 "
" "	"	12 "	.. 7/ "

"BUNION PLASTERS ON KID.

Oval, square, or round, in boxes containing 6 Plasters, 2/8 per dozen
Subject to Discount.

MANUFACTURED BY

[4]

SEABURY & JOHNSON,

46 JEWIN STREET, LONDON, E.C.

NEW YORK. MONTREAL. HAMBURG.



Chas. Southwell & Co.'s

FINEST EXTRA QUALITY

ESSENCES

Put up in neat
1-oz., 1-oz., and 2-oz. Bottles
(Containing Full Measure).

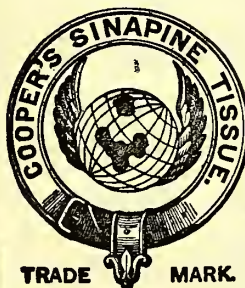
DRIED ORANGE PEEL
FOR DRUGGISTS' USE.

CITRO-TARTRATE.

CHAS. SOUTHWELL & CO.
DOCKHEAD, LONDON.



**THE IMPROVED MUSTARD PLASTER THAT
NEVER BLISTERS THE SKIN.**



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COOPER'S SINAPINE MUSTARD TISSUE PAPER.

For Medical Testimonials see *Chemist and
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Inventors and Sole Manufacturers:

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Pharmaceutical Chemists,

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Established 1863.

May be obtained of Wholesale Agents throughout the
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Guide to New Patent Law and Registration gratis.

EMP. BELLADONNA.

ON SWANSDOWN, 16 IN. WIDE.
17s. per Doz. net cash.

JOHN QUILLIAM & CO., Plaster Works, Manchester.
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GLYCERINE.

SUCHOMEL'S GLYCERINE (Lion Brand) is ABSOLUTELY
PURE and the CHEAPEST in the Market.

Sole Agents—VAN GEELKERKEN & CO.
79 MARK LANE, LONDON, E.C.

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TRIPLE. EXTRACTS. CONCENTRATED.
8s. 6d. per Pint; Three Pints, 8s. 3d.

JOHNSON & CO., Wormald Row, LEEDS.

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EDMOND RAQUET,
E. OFTINGER,
Successor,
26 rue de Navarin,
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THE ALOFAS REMEDIES

TINGTURES, PILLS, OINTMENTS, EMBROCATION, ETC.

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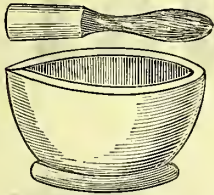
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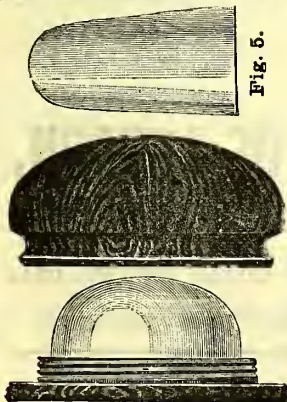


Fig. 1.

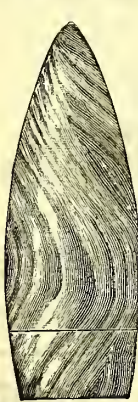


Fig. 3.



Fig. 4.

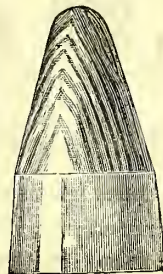


Fig. 6.

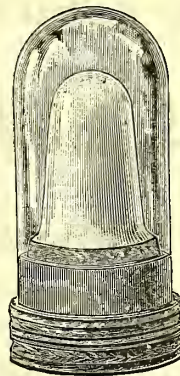


Fig. 7.

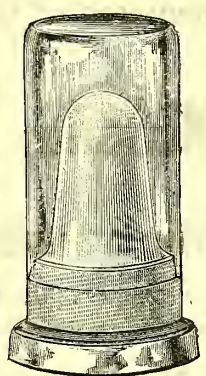


Fig. 8.

Fig. 1.	In Ebony Cases, flat for the pocket	Per doz.	4 8
	In Boxwood Cases, per doz., 2/9, 3/6, and 5/-; in Vegetable Ivory	...	...	"	4 8
Fig. 3 & 4.	In Boxwood Cases, per doz., 2/3, 3/9, and 5/-; in Vegetable Ivory	...	...	"	4 6 and 5 3
Fig. 5.	In White Opaque Glass Jars with Red Celluloid Caps ...	...	...	"	2 3 and 3 -
	Mounted, in Stoppered Bottles ...	...	...	"	6 -
Fig. 6.	Mounted on Vegetable Ivory, in Glass Bottles, Screw Metal Caps	...	...	"	4 3
Fig. 7.	On Boxwood Mounts, Glass Covers...	...	...	"	3 - and 4 -
	On new Glass Mounts, Glass Covers ...	...	...	Per doz.	3 3, 3 9, 4 6 and 7 6
	On new Earthenware Mounts, Glass Covers	Per doz.	4 6 and 7 6
Fig. 8.	On Glass Mounts with Glass Covers	"	4 - and 5 6

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(THOMSON'S PATENT).

A most carefully conducted set of experiments by eminent members of the Medical Profession has established the fact that this Soap is of the highest value in the treatment of ECZEMA, RINGWORM, SCABIES, FAVUS, and other Diseases of the Skin.

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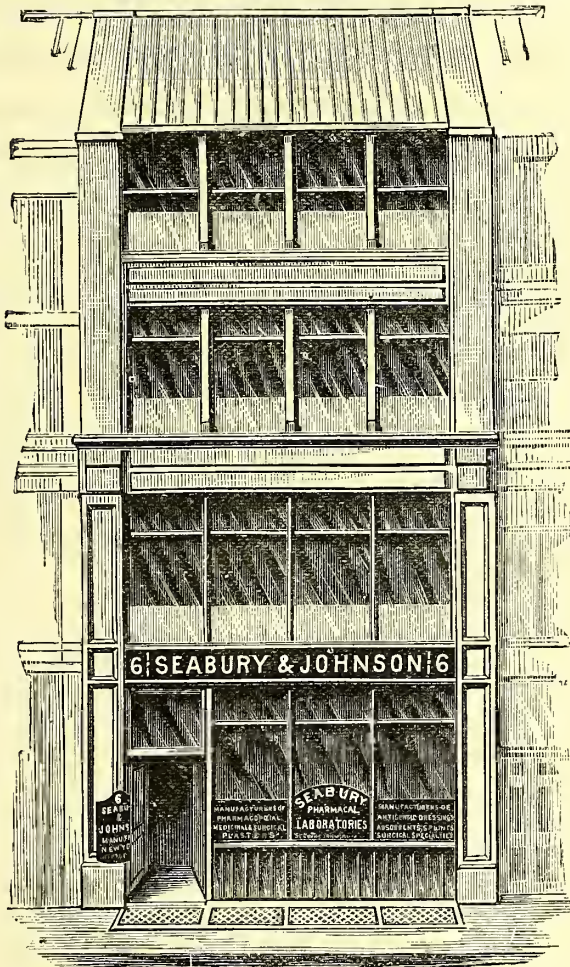
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Brit. Med. Jour., page 78,
April 6, 1889; see also page
1047, May 11, 1889, Edington
on "The Practical Values of
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For full description see THE CHEMIST AND DRUGGIST, No. 453, Vol. xxxiii, December 22, 1888.

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Reason how we may, "Vinolia" has proved itself a necessity in medical practice by its use in numberless cases of Eczema, some of them of very long standing having progressed to recovery. Not all cases have been cured, but this is no drawback, for reasonable people are not always looking for cure alls. One thing, however, can be said of "Vinolia;" it is that it will, without fail and at once, relieve itching and irritation of the skin from any and every cause. For sunburns, after shaving, and for chafes, there probably has never been anything so satisfactory to use. There is one thing also that can be said of "Vinolia" Soap, and that is, that its distinctive characteristic is that it contains extra fatty matter, it is made from the very best and finest materials that can be procured, it is manufactured on the most absolutely scientific lines, it is turned out in a perfectly neutral state, and if, peradventure, in washing, any free alkali is by any chance dissolved, its action upon the skin is completely provided against. It is of course well for all to bear in mind that the skin of the townsman, and those who lead a sedentary life, is not over abounding in fat, and tends to become dry and hard, and to lose its velvety feel; all the more reason that a proper soap be used; all the more occasion then that the skin be promoted in its remedial efforts by such a plastic emollient cream as "Vinolia."

Please send us a post card at once if you have stocked "Vinolia" and "Vinolia" Soap.

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ENEMAS

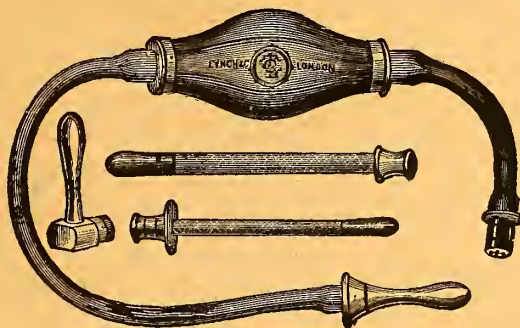
FITTED WITH PATENT GLASS VALVES.

(Patent 13,816, dated 12th October, 1887.)

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	£	s.	d.
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435C Ditto, ditto, LYNCH'S, requiring no metal mounts, black, green, red, or white, india-rubber, made in one continuous piece, warranted not to split, and fitted with bone rectum pipe, in slide cedar boxes...per doz.	1	10	0
435D Ditto, ditto, with bone rectum pipe, elastic-gum vagina pipe, and leather shield, in slide cedar boxes, ..	1	15	0
435E Ditto, ditto, in oval leather box, complete	2	2	0
436 LYNCH'S FAMILY, on Higginson's principle, fitted with bone bulb-pointed rectum pipe for adults, elastic-gum rectum pipe for children, elastic-gum vagina pipe and leather shield, in mahogany box...per doz.	2	8	0
437 Ditto, in slide cedar box	2	2	0
437A LYNCH'S PERFECTION, in mahogany box	2	17	0
437B Ditto ditto in slide cedar box	2	11	0
437E LYNCH'S COMPLETE HOUSEHOLD SYRINGE, consisting of Higginson's Enema with disconnecting mounts, fitted with bone bulb-pointed rectum pipe for adults, elastic-gum rectum pipe for children, elastic-gum vagina pipe, leather shield, and bone pipes for ear, eyes, and nose, in mahogany box, per doz.	4	10	0
Nos. 436 to 437E can be fitted with bone Angle pipe, at 4/ per doz. extra.			
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THE MOST EFFECTIVE METHOD
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We have, we think, improved upon Mr. Smith's instrument; replacing the screw ointment-exPELLER by a simple collapsible tube, ready filled with antiseptic ointment. This, when emptied, can be replaced by a fresh one at a small cost. The collapsible tube makes the application at once more cleanly, effectual, and economical.

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Spare Tubes filled with either Ointment	1s. 6d.	"	
" " " " c. Cocaine	2s. 6d.	"	

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